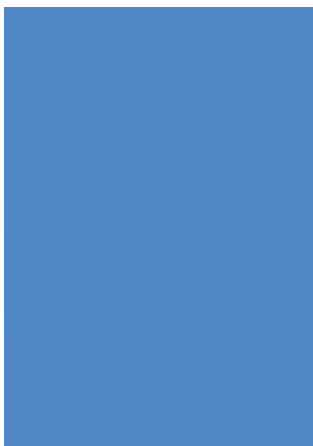
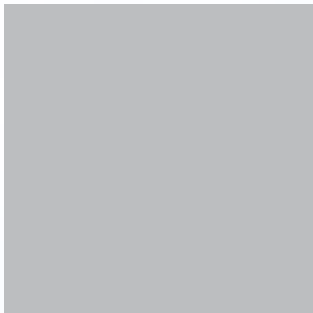




COVID-19 Appropriate Behaviour in India

Knowledge, Attitude and Practice



A Nationwide
Cross-Sectional Study

COVID-19 Appropriate Behaviour in India

Knowledge, Attitude and Practice

A Nationwide Cross-Sectional Study

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Foreword

India has been severely impacted by the COVID-19 pandemic. Even after a decline in the number of new cases, the government is faced with enormous challenges to protect the large and highly diversified population of the country. It is a well-recognised fact that in order to mitigate the social and economic costs of pandemic containment and saving of lives of it is important not only to continue taking precautions, but also update our knowledge regarding the COVID-19 infection and its treatment as well as increase the uptake of vaccinations. Both the Government of India and the World Health Organisation (WHO) have laid emphasis on the role that individuals can play in curbing the spread of COVID-19. Therefore, periodic investigations regarding knowledge, attitude and treatment of COVID-19 cases as well as preventive behaviours among the general population are needed to adjust the existing policies and programmes accordingly as the situation demands.

The National Institute of Urban Affairs (NIUA) in collaboration with the United Nations Children's Fund (Delhi office) has undertaken a research study titled 'COVID-19 Appropriate Behaviour in India: Knowledge, Attitude and Practice'. The broad objectives of the study was to assess the extent of awareness/knowledge and behaviours appropriate to counter the virus among the general population (both individual households and people in public places), the reasons behind complacency regarding COVID-19 appropriate behaviours, and to document the general perception towards COVID-19 vaccine inoculation and other barriers.

This report presents findings from three sets of surveys, namely, Observational Survey, Social Experiments and Household Survey regarding appropriate behaviour, and knowledge and attitude towards COVID-19 infection. The surveys were conducted during the months of July-August, 2021, in 10 cities and rural areas of 12 districts across 11 states of India. We hope that the findings highlighted in this study can serve as an informed resource for prioritisation of mitigation measures of the COVID-19 infection and also offer support in designing appropriate long-term recovery plans.

Hitesh Vaidya
Director, NIUA

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This research is the result of team work. I deeply acknowledge the efforts of the research, design and finance teams at NIUA. Last but not the least, we are grateful to Mr. Hitesh Vaidya, Director, NIUA, for his constant encouragement and support.

Debolina Kundu
Professor, NIUA



Location: Basi Adda, Banswara, Rajasthan

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Abbreviations

3T	Test, Track and Treatment
ASHA	Accredited Social Health Activist
CAB	COVID-19 Appropriate Behaviour
CABS	COVID-19 Appropriate Behaviour Survey
COVID-19	COVID-19 Virus
CDB	Community Development Block
GDP	Gross Domestic Product
HH	Household
HIG	High Income Group
KAS	Knowledge and Attitude Survey
MIG	Middle Income Group
MoHFW	The Ministry of Health and Family Welfare
NCDC	National Centre for Disease Control
NEGVAC	National Expert Group on Vaccine Administration for COVID-19
NIUA	National Institute of Urban Affairs
SAGE	Strategic Advisory Group of Experts
SE	Social Experiments
TV	Television
UN	United Nations
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

Executive Summary

To curb the spread of COVID-19 infections, the Government of India implemented a wide range of behavioural and risk communication strategies. As a result, the general population has been attempting to reorient themselves to the economic, social and behavioural changes necessitated by the rapid spread of the infection during the peak of the COVID-19 pandemic. Although the main focus of current policies in the country is to cope with the immediate economic and social impacts of COVID-19, there is a need to maintain an enabling environment to support and sustain the practice of COVID-19 appropriate behaviours (CAB) among the population. In this regard, the study intends to fill in the gaps regarding knowledge, attitude and practice of COVID-19 appropriate behaviours across different locations, socio-economic and the demographic factor involved.

The current study was proposed and conceptualised by National Centre for Diseases Control (NCDC) to be conducted in collaboration with United Nations Children's Fund (UNICEF) and World Health Organisation (WHO). This is a follow up research of a pilot study on COVID-19 appropriate behavioural surveillance conducted in Delhi by NCDC in collaboration with United Nation Children's Fund (UNICEF) and its partner agencies in 2020. Based on the inputs from the pilot study, NCDC proposed to conduct a nation wide survey based study on COVID-19 Appropriate behaviour in India: Knowledge, Attitude and Practice' in collaboration with UNICEF (Delhi office). UNICEF partnered with National Institute of Urban Affairs (NIUA) for undertaking this study.

As perception based surveys may reflect social stigma and self-reporting bias and subsequently affect policy formulation, this study utilised a combination of three different methods:

- (i) Observational Survey—to observe the distribution of population not following COVID-19 appropriate behaviours in public places;
- (ii) Social Experiments—to explore the barriers in practice of COVID-19 appropriate behaviours in public places;
- (iii) Knowledge and Attitude Survey (Household Survey)—to assess the knowledge and attitude of a household towards the spread of COVID-19 and its responses including treatment-seeking behaviour, maintaining personal hygiene, and attitude towards vaccination.

Adopting multiple approaches to gather data also helped in contrasting evidence regarding the actual practice of COVID-19 appropriate behaviours. The study included 10 cities and 12 districts across 11 states to represent geographical and urban-rural diversity. Also, samples were selected from different localities in the urban areas that represented the socio-economic diversity. Moreover, the study conducted observational studies across a dynamic set of public places which are accessed by individuals from different socio-economic sections in order to capture the variability in attitudes and practices.

The Knowledge and Attitude Survey (KAS) found that the knowledge and awareness levels varied significantly between rural and urban areas, and across different urban localities, gender, age groups, and levels of education. The overall knowledge level was noted to be poorer in rural areas, among women, and those with up to upper primary education. Lack of information about the COVID-19 virus, its treatment and availability of vaccines was higher in rural areas and among those with less education. Another segment that was found to be lacking in awareness was senior citizens, who particularly had poor knowledge about testing facilities and treatments and therefore needed targeted communication. Television and social media were found to be the two most efficient mediums for public health communication. On one hand, television can be utilised to reach out to wider audiences including those with poor digital literacy, and on the other hand, social media can be utilised to target youth and educated people.

The study also found that hesitancy in taking the vaccine was higher in urban areas and among younger age groups and women, which had an adverse impact on the uptake of vaccination. Also, the awareness

regarding the necessity to follow CAB post-vaccination was much lower in rural areas, among women, and younger age groups, people living in middle-income urban localities and slums.

Further, it was seen that self-reporting figures related to the practice of COVID-19 appropriate behaviours, as in wearing masks, maintenance of physical distancing, and cleaning/sanitising of hands were much higher than the observed practice of the same, especially in rural areas and among men. This indicates the need for evidence-based policies based on observation of actual practices and social experiments. Apart from this, the study also identified certain public places such as open markets, tea stalls and religious places where the practice of COVID-19 appropriate behaviours was low as compared to other places such as malls and restaurants. This indicated that the risk perception and protocol adherence in public places which are accessed by those who are socio-economically better-off is higher than other places.

The comprehensive set of findings from this study provides novel insights about the knowledge, attitude and practice of preventive behaviours regarding the COVID-19 disease. For instance, a definite vulnerability has been captured among the socio-economically disadvantaged groups such as people in rural areas, women, slum dwellers and those who are less educated. Thus, the future discourse in policy-making needs to focus on an equity based approach to fill the gap in knowledge and actions related to prevention of COVID-19 among diverse groups. Also, the role of Community Health Workers such as Accredited Social Health Activists (ASHAs) in increasing the uptake of vaccination in rural areas and among women also needs to be identified and utilised in future programmatic interventions.



Location: Balwara, Dungarpur, Rajasthan

Introduction



Wash Hand



Use Soap



Avoid Crowd



Use Mask



Avoid Shakehand



Use Disinfection

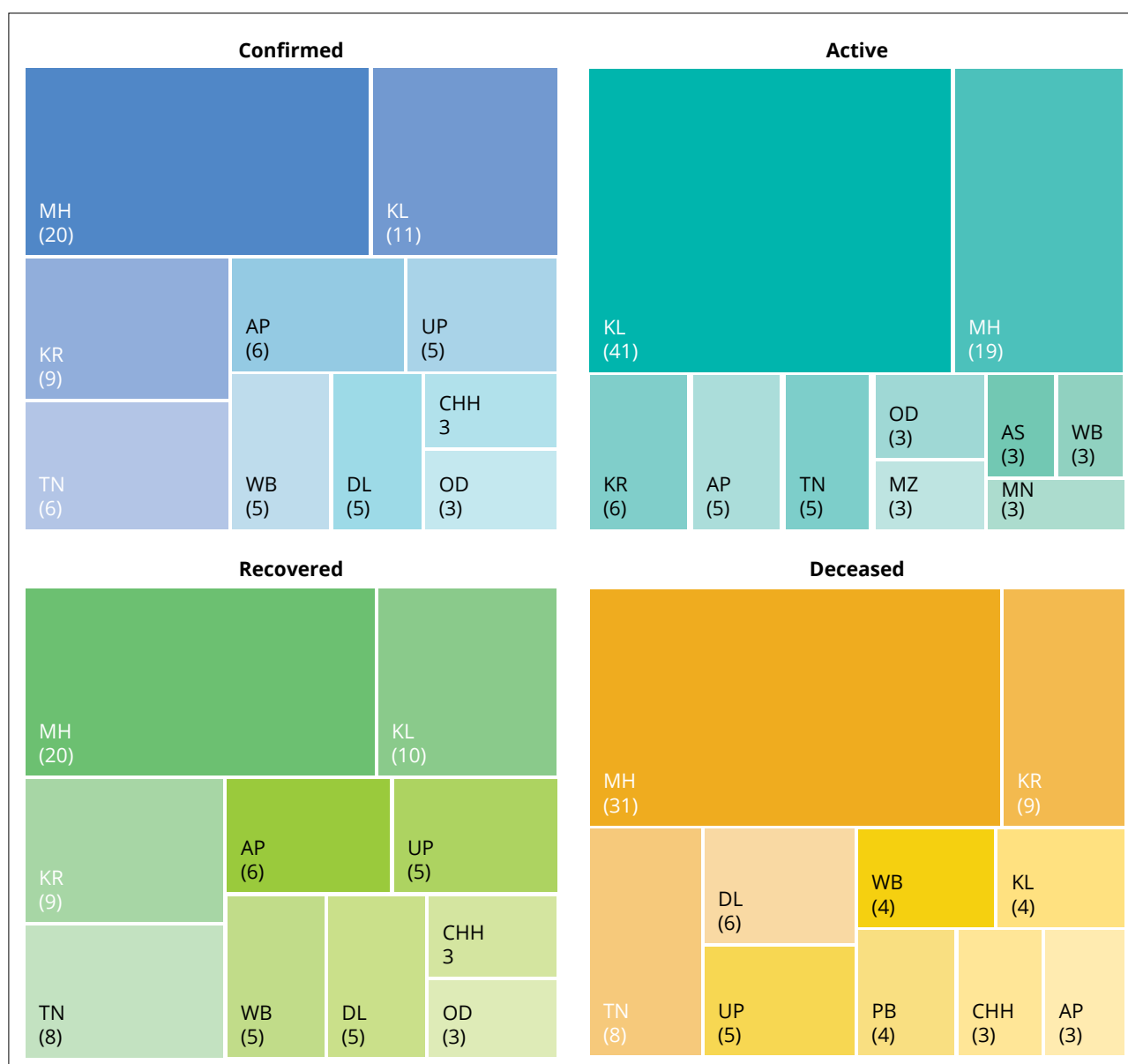
1.1. Introduction: India and the pandemic

The COVID-19 pandemic has affected more than 180 countries since 31 December, 2019. Post the declaration stating COVID-19 as a global pandemic by WHO on 11 March, 2020, most nations have incurred devastating losses in terms of human lives, economic growth and industrial progress.

According to WHO, there were 203,295,170 confirmed cases and 4,303,515 deaths related to COVID-19 globally as of August, 2021.¹

India witnessed its first case of COVID-19 on 31 January, 2020 and as of 9 August, 2021 has experienced a total infection count of 31,969,954,

Figure 1.1: Ranking of Top 10 States in India by Various COVID-19 Related Indicators, India, 2020-21



Note: Figures in the brackets denote percentage share of corresponding states to total

AP – Andhra Pradesh, AS – Assam, CHH – Chhattisgarh, DL – Delhi, KL – Kerala, KR – Karnataka, MH – Maharashtra, OD – Odisha, PB – Punjab, TN – Tamil Nadu, UP – Uttar Pradesh, WB – West Bengal

Source: MoHFW, Government of India, August, 2021

1. <https://covid19.who.int/>

and 428,309 corona virus-related deaths (Ministry of Health and Family Welfare).² Trends and patterns of the COVID-19 spread in India reveal certain distinct differences between the surge of cases seen during 2020 and 2021, respectively, officially known as the first and second waves of the virus outbreak. COVID-19 infections reported a sharp increase during the months of June-July 2021, with approximately 40,000 new infections reported on an average each day.³

In India, the first confirmed case of COVID-19 was reported from the state of Kerala in January, 2020 (Andrews et al. 2020; Narsimhan, 2020).⁴ As the pandemic progressed, data showed evidence of significant inter-state variations across all parameters. Ten states accounted for almost 75% of the total number of confirmed COVID-19 cases in India. Among these top 10 states, Maharashtra, Kerala and Karnataka contributed more than half of the total confirmed cases in India.⁵

A deeper analysis by type of cases revealed that whereas Kerala reported the highest number of active cases, Maharashtra reported the greatest number of COVID-19 related deaths (Figure 1.1).⁶

1.2 Differential vulnerability to COVID-19 infection across socio-economic strata and geographic clusters

The rapid spread of COVID-19 over time in different socio-economic and geographic clusters created the need to identify and explore other pathways through which processes like disease transmission, adoption or barriers of preventive behaviours, and vaccine uptake or hesitancy could be explained. Moreover, identifying high-risk clusters becomes imperative for formulating highly effective response strategies to curb the further spread of COVID-19.

Studies revealed a significant rise in the number of COVID-19 infections in rural areas during the second wave (March-August, 2021), whereas during the first wave (March-September, 2020), the cases were observed to be concentrated among the urban centres, especially a few metropolitan cities (Mishra Haque & Gayen, 2020; Radhakrishnan & Sen, 2021; Malani et al. 2021; Chaba, 2021).⁷ This rise was mainly attributed to the large-scale return of migrants from big cities and industrial hubs in the wake of the second wave (Suresh & James, 2020; Allain-Dupré, Chatry, Michalun & Moisiso, 2020; Gupta, Biswas & Kabiraj, 2021). Overall, the vulnerable groups residing in urban areas, including



Location: Vinchur Village, Nasik District, Maharashtra

2. <https://www.mohfw.gov.in/index.html>

3. <https://www.reuters.com/world/india/india-records-41195-new-coronavirus-cases-2021-08-12/>

4. "India's first Corona virus patient discharged after being cured." *Hindustan Times*. 20 February, 2020 retrieved on 24 July, 2021

5. Ministry of Health and Family Welfare, Government of India, release date: 5 August, 2021

6. The reference point for all comparative data is restricted till August, 2021 for ensuring comparability with the study timeline

those working in the informal sector such as daily wage workers, street vendors, sex workers, the homeless, people with disabilities, transgenders, slum dwellers, tribal communities, people with comorbidities, among others were identified as those who were both most affected and also the most at-risk population during the pandemic (GIZ, 2021).

Another important observation of the pandemic was the changing incidence of COVID-19 infection among various age groups. At the beginning of the pandemic, older adults were found to be more susceptible to the virus, where more than two-thirds of those infected belonged to the age of 40 years and above (Jakhmola, Baral & Jha, 2021; Laxminarayan et al. 2020; Singh, Khullar & Sharma, 2020).⁸ However, in the second wave of the virus spread, a surge of cases among younger adults was also observed (Lalwani, 2021; Thiagrajan, 2021).

The staggering body of research identifying different factors such as gender, neighbourhood, population density, access and quality of health services, socio-economic status etc. that has emerged in a short span of time from different regions of the world needs to be validated against regional, sub-regional and local realities (Pinchoff et al. 2020; Galasso et al. 2020; Corburn et al. 2020; Vinchurkar, Jain & Punamiya, 2021; Bhadra, Mukherjee & Sarkar, 2021). The diverse impacts of the ongoing pandemic are still unravelling, so the national mitigation strategies and relief operations have to be in cognisance with their consequences on the local population, especially those that are among the most vulnerable even if there was no pandemic (GIZ, 2020).

Box 1.1: National Expert Group on Vaccine Administration for Covid-19 (NEGVAC)

A National Expert Group on Vaccine Administration for COVID-19 (NEGVAC) was constituted by the Government of India to provide guidance on all aspects of Covid-19 vaccine administration in India.

1.3 Mitigation of COVID-19 in India

The Government of India undertook several steps to curb the exponential increase of the virus infection. For instance, in 2020, India had been through various phases of COVID-19 pandemic response, such as nationwide lockdown phase (1-4) and unlock phases (1-7) in 2020, and additional phases (8-14) till July 2021. Other responses to the COVID-19 outbreak included strategies such as increasing the testing capacity, upgrading health care infrastructure and manpower, procurement of logistics, continuous epidemiological surveillance, scientific research on COVID-19 disease transmission, biological outcome, treatment and vaccine production, targeted relief activities etc.

Most importantly, there has been a comprehensive outreach of knowledge on COVID-19 in India as a part of the strategy to control its spread since 2020. However, the subsequent rise, which was believed to be the onset of a second wave, could be attributed to the reluctance or failure among certain sections of the population to practise COVID-19 appropriate behaviours and follow guidelines circulated by the administration towards mitigation of the pandemic. Also, the sudden onset of the pandemic and consequent nation-wide lockdown has dramatically highlighted the lack of recognition of vulnerable groups (seasonal workers, migrant labour rendered homeless, people with disability etc.) within any social protection system (health, economic, social) in the country.

Global agencies and emerging scientific evidence identified various programmatic as well as behavioural factors as effective strategies to mitigate the effects of the pandemic. A few of them are discussed below.

1.3.1 Targeted vaccination programmes

Global analysis and growing research has unanimously agreed to the fact that vaccination against COVID-19 is the most efficacious way of preventing and slowing down transmission (Meehan et al. 2020; Wang et al. 2020). Moreover, it was realised that targeting selected population groups for COVID-19 vaccines will ensure direct protection of the high-risk populations, as well as promote herd immunity for those who are the most vulnerable (Lipsitch & Dean, 2020; Koff et al. 2021). This strategy would later be adopted by several countries including India, primarily based on Global

7. "30 municipal areas account for 79% of India's Covid caseload", published on 15 May, 2020, *The Times of India* <https://timesofindia.indiatimes.com/india/30-municipal-areas-account-for-79-of-indias-covid-caseload/articleshow/75763216>.
8. "First vs second wave of Covid-19 in India: Things you need to know", published on 19 April, 2021, *The Times of India*. <https://timesofindia.indiatimes.com/india/first-vs-second-wave-of-covid-19-i-india-things-you-need-to-know/articleshow/82143427>



Location: Vidyanagar, Kasaragod District, Kerala

Best Practices, Standard Operating Procedures (SOPs) of WHO and recommendations of the National Expert Group on Vaccine Administration for COVID-19 (NEGVAC). The National COVID-19 Vaccination Programme was initiated by vaccinating all health care workers. In the following phases, the programme was then extended to include frontline workers first, then citizens more than 60 years of age, followed by citizens more than 45 years of age, and eventually citizens more than 18 years of age (MoHFW, 2020). This phase-wise inclusion coupled with centre-state partnership across funding, logistics and procurement of the vaccines, engagement of the private sector, scientific prioritisation and a wider access through digital platforms has yielded tremendous positive results for what was the largest vaccination campaign globally (Kumar, Pandi-Perumal, Trakht & Thyagarajan, 2021).

1.3.2 Dissemination of timely and accurate information related to COVID-19 and its prevention

The role of mass media and information dissemination platforms in mitigating public health risks is unquestioned, more so in the recent era (Anwar, Malik, Raees & Anwar, 2020; Garg et al. 2021). However, past experiences and history of the evolution of the public health sector is strewn with examples of the harm that misinformation or lack of information has caused towards mitigating disease outbreaks and pandemics. The problem is further exacerbated in today's highly digitised world with inaccurate and delayed information creating

fear and mistrust regarding novel treatments and practices, which situation has been coined as an 'infodemic' by WHO (Box 1.2).

Box 1.2: Infodemic

WHO has coined a new term known as 'infodemic' which basically refers to the "overabundance of information—some accurate and some not—that occurs during an epidemic. It can lead to confusion and ultimately mistrust in governments and public health response."

In response, a team of WHO 'mythbusters' are working with search and media companies like Facebook, Google, Pinterest, Tencent, Twitter, TikTok, YouTube and others to counter the spread of rumours, which include misinformation, for example, that the virus cannot survive in hot weather, that taking a high dose of chloroquine medication can protect you, and that consuming large quantities of ginger and garlic can prevent the virus.

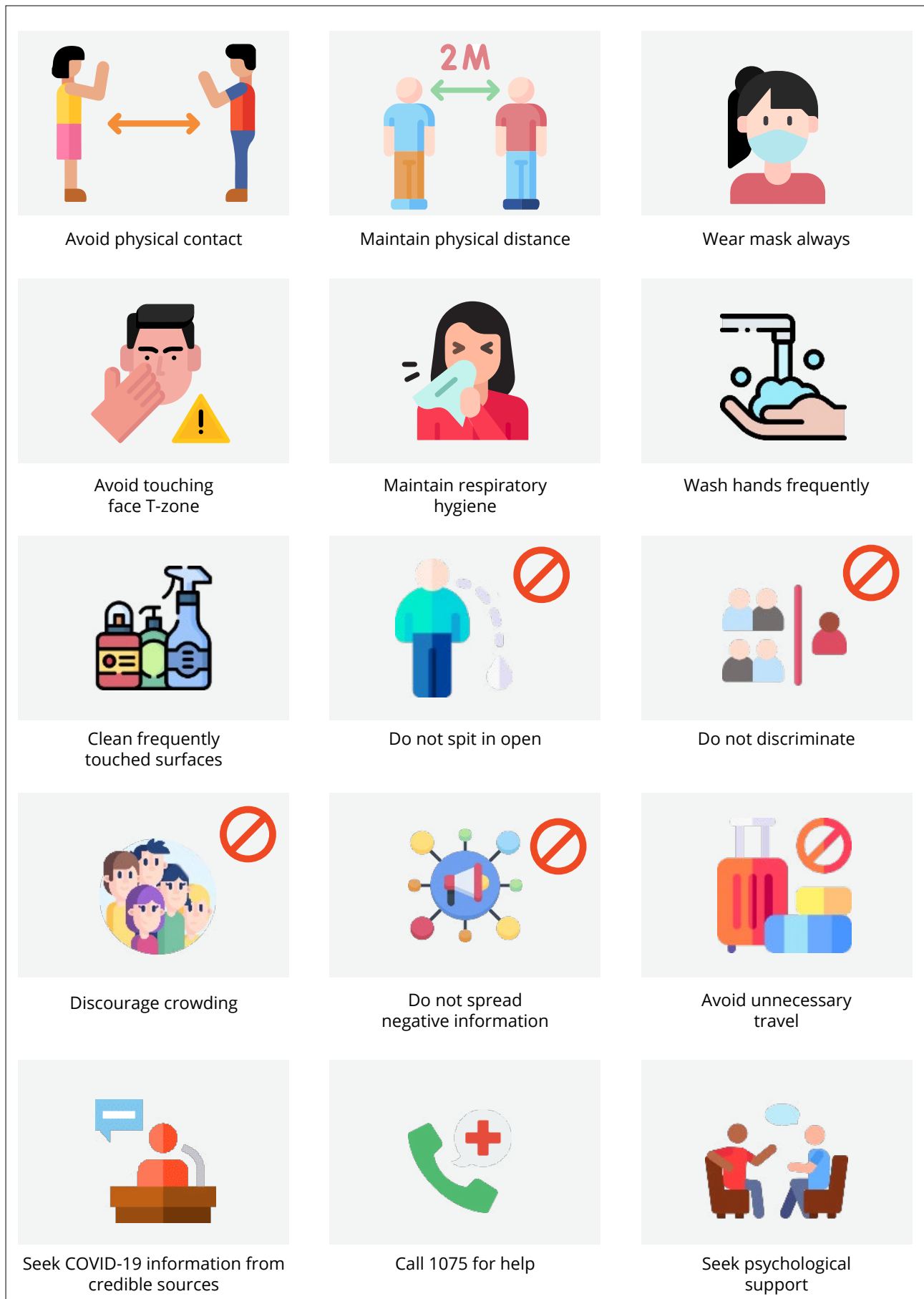
Source: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>

The danger of an 'infodemic' is very high in developing countries like India, where the audience for any information is large and less educated. The MoHFW also realised that the most vital factor in mitigating COVID-19 at the local level is to empower citizens with the right information about the epidemiology of the virus, vaccine development and prevention techniques. In this regard, several advisories were issued by the government regarding the roles and responsibilities of various social and digital media platforms in regulating the content of information shared on their platforms. The government also urged the youth to engage in mass sharing of positive news regarding vaccines and to support others in dealing with anxiety, depression or fear related to COVID-19 (MoHFW, 2021).

1.3.3 Advocacy and adoption of COVID-19 appropriate behaviours (CAB)

The overarching focus of the global response strategy outlined by WHO to combat COVID-19 is to curb the further spread of the pandemic by slowing the transmission with the practice of everyday preventive actions. This would further reduce the excessive burden on already overwhelmed health systems, especially in the developing countries (WHO, 2020; Abebe, Shitu & Mose, 2021). To this effect, each individual is pivotal to curbing the spread of the pandemic. A set of protective behaviours were underlined for protection of individuals and minimising the risk of infection.

Figure 1.2: Comprehensive Guidelines on COVID-19 Appropriate Behaviour (CAB) Advised by the Government of India



Source: MoHFW, Government of India, 2020



Location: Nellikunnu Village, Kasaragod District, Kerala

In India, in June, 2020 an illustrated guidebook was issued by the MoHFW consisting of a comprehensive list of 15 preventive behavioural practices against the COVID-19 virus with the aim that mitigating the pandemic would only be possible if ‘everyone knows their goal; everyone knows their role’ (Figure 1.2). Therefore, both at global and national levels, the role of individuals in curbing the spread of COVID-19 infections was realised, and emphasis was laid on dissemination of timely and accurate information. However, as the pandemic continues to evolve, strategies need to be regularly reviewed and adjusted according to the local epidemiology and community behaviour.

1.4 Rationale of the study

Global and national policies have placed individuals at the centre of COVID-19 mitigation strategies (Van et al. 2020). In this context, behavioural and social interventions have become an essential component of efforts to mitigate the effects of outbreaks. Intervention strategies for prevention, control and mitigation of outbreaks rely heavily on inter-sectoral coordination, community participation and ownership. Central to this shift in approach is the commitment to integrated and technically sound strategies that include effective health communication. Given the prolonged and unpredictable nature of the current COVID-19 pandemic and the fact that India reported the second largest number of confirmed cases of COVID-19 in the world, there is a long way ahead in returning to normalcy.

India has already employed various ‘Behavioural and Risk Communication’ strategies to improve COVID-19 appropriate knowledge, attitudes and behaviours to reduce the risk of transmission and delay the spread of the infection, in turn reducing the disease burden and mortality rates. There is a need to assess the impact of these interventions on the community, since containing a pandemic not only involves public health response but also requires inter-sectoral coordination and community participation. Also, a COVID-19 mutant strain discovered in the United Kingdom has been found to be more infectious than the existing variant (Wise, 2021). There is a high possibility that India may encounter the new strain and can potentially change the entire course of the pandemic and response activities in the country. Even after the start of the vaccination drive and inoculation of 51,57,72,612 doses as of 10 August, 2021,⁹ there was no sign of relief. This led to a compulsive need more than ever to know and address the issues of knowledge, attitudes and behaviours related to the COVID-19 spread (mode of transmission, symptoms, preventive measures etc.) in the community—how informed is the community about the latest health advice and what are the barriers for not seeking/ following this advice. It is also important to know the perception and agreeability of people towards the vaccination drive.

9. <https://dashboard.cowin.gov.in/>

1.5 Objective of the study

The study intends to assess the knowledge, attitudes and behaviours about COVID-19, and the practice of various preventive measures and perception towards vaccination among people across various socio-economic diverse groups. The objectives of the study are as follows:

- To assess the extent of awareness/knowledge and behaviours appropriate to combat COVID-19 and actual adherence to appropriate behaviours among the general population, both within individual households and among people in public places;
- To find out reasons behind complacency regarding COVID-19 appropriate behaviour across households in different types of settlements;
- To evaluate perceptions towards the COVID-19 vaccination drive and individual attitudes towards vaccine inoculation of self and other household members.

1.6 About the study

Keeping the idea of individuals as agents of change during the pandemic mitigation phase, this study utilised a combination of methods consisting of (i) Observational Survey; (ii) Social Experiments; and (iii) Knowledge and Attitude Survey (Household Survey) to obtain data on a multitude of topics and supplement the growing scientific literature regarding best practices and related issues of



Location: Nellikunnu Village, Kasaragod District, Kerala

the COVID-19 outbreak. For instance, the study focuses on issues such as adoption of COVID-19 appropriate behaviour patterns, barriers to adoption of such behaviours, knowledge about testing facilities, knowledge and attitude towards COVID-19 prevention, treatment, vaccine availability and costs. Furthermore, information regarding the demographic and socio-economic characteristics of the respondents (age, sex, level of education), household characteristics (income, household type, availability of water, sanitation and hygiene facilities), density of population for rural districts, and types of settlements for urban areas was also collected to explore causal pathways.

1.7 Scope of the study

The study covers 10 cities and 12 districts (refer to Table 1.2)

Table 1.1: Methods and Scope of the Study

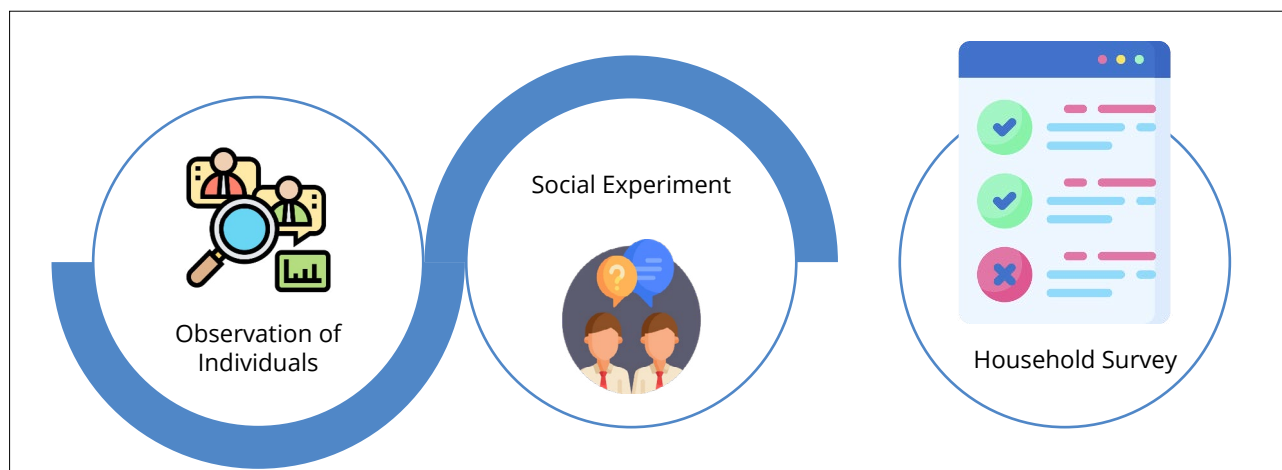
Methods	Scope
Observation	To figure out how general population practices social distancing and personal hygiene in common public places such as local markets in colony/slum, shopping malls, transport hubs, open parks/gardens, etc.
Social Experiments	To find out instant reactions of individuals after facing question on non-practising COVID-19 appropriate behaviours in public places and map most prevalent reasons for the same.
Knowledge and Attitude Survey (Household Survey)	To assess the level of awareness towards COVID-19 diseases and vaccination, the practice of COVID-19 appropriate behaviour and reasons for not following the same across HHs with differential access to various basic amenities such as availability of rooms, hand-washing facilities, drinking water connections etc.

1.8 Survey tools

This study focuses on three tools to assess the knowledge of and attitude towards the COVID-19 outbreak as well as practice of COVID appropriate behaviours (Figure 1.3).

1. **COVID-19 Appropriate Behaviour Survey (CABS)** includes two tools: **Observation Survey**, and conducting **Social Experiments** in a sub-set of observed samples (individuals) who are not following CAB.
 - a) **Observation** of COVID-19 appropriate behaviours of the people in public places is done according to a structured

Figure 1.3: Tools for the Study



questionnaire (Annexure 1.1). The rationale behind the observation tool was to see the distribution of population not following COVID-19 appropriate behaviours, such as maintenance of respiratory and personal hygiene and physical distancing.

b) **Social Experiments (SE)** include canvassing of a few questions to a sub-set of observers (individuals) who are not following COVID-19 appropriate behaviours (CAB) in public places. The details of the social experiment are discussed in Annexure 1.2.

2. **Knowledge and Attitude Survey (KAS— Household Survey)** is the third tool which has been conducted through a structured questionnaire. This was carried out for a household survey. KAS tried to assess the knowledge and attitude of individual households towards the spread of COVID-19 and their response measures including treatment-seeking behaviours, maintaining personal hygiene and attitudes towards vaccination. The details of the tool are discussed in Annexure 1.3.

1.9 Geographical coverage: Cities and districts

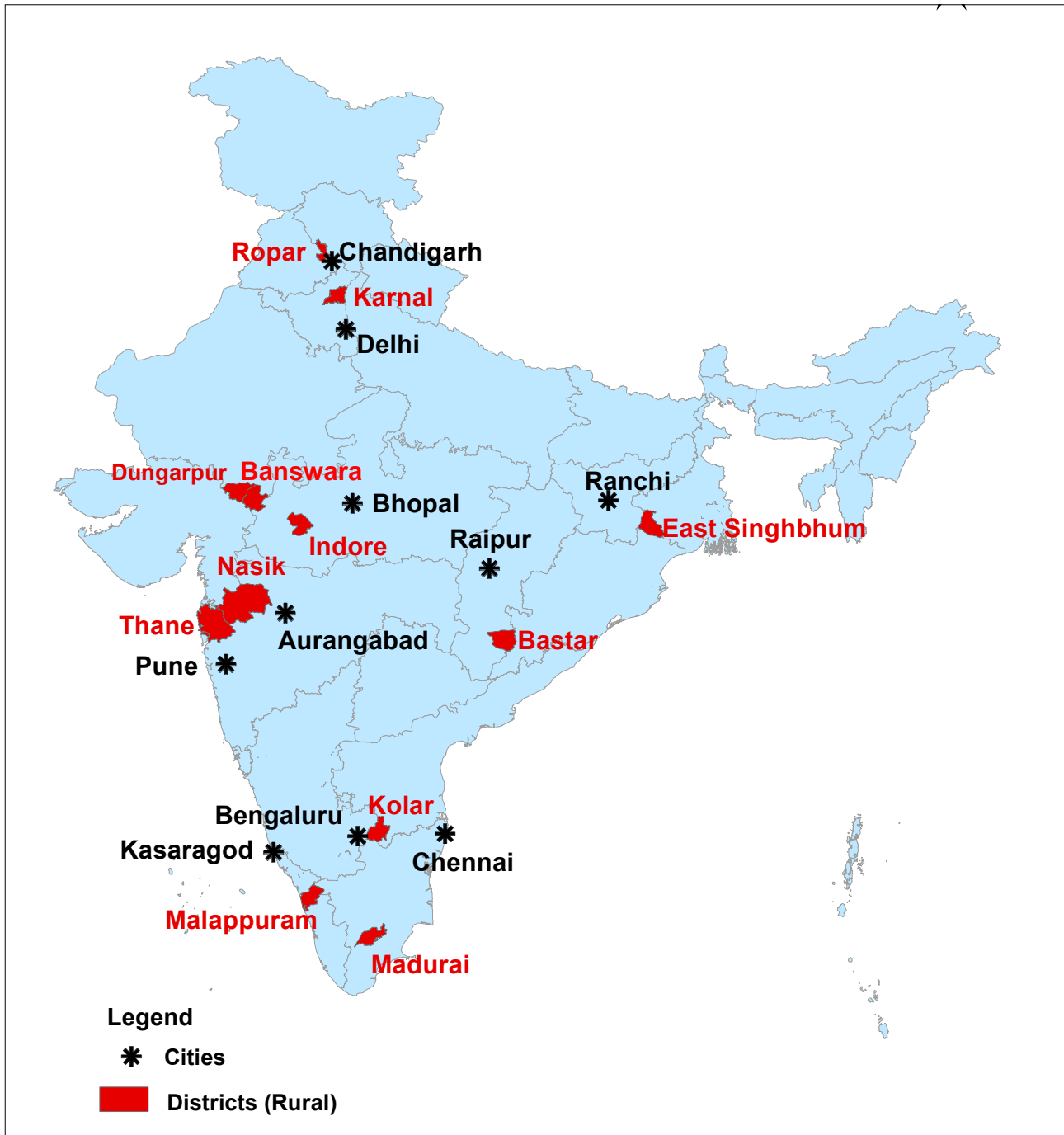
Surveys for this study were conducted in different parts of the country representing the geographical regions. In this regard, 11 states i.e. Delhi, Punjab, Haryana, Maharashtra, Rajasthan, Chhattisgarh, Jharkhand, Madhya Pradesh, Karnataka, Kerala and Tamil Nadu were selected for the study (Table 1.2). A total number of 10 cities and 12 districts were selected from these 11 states (detailed in Table 1.2 and Figure 1.4).

As the spread of the COVID-19 virus is predominantly concentrated in the large metropolitan cities, a major focus has been given to metropolitan cities/ urban agglomerations (UA) with a high prevalence of COVID-19 cases. Ten metropolitan cities/UA have been selected viz. Nagpur, and Aurangabad from Maharashtra, Chennai from Tamil Nadu, Bengaluru from Karnataka, Kasaragod from Kerala, Delhi, Chandigarh from Punjab, Bhopal from Madhya Pradesh, Ranchi from Jharkhand and Raipur from Chhattisgarh.

Table 1.2: Survey Locations: Cities and Districts

Regions	States	Cities	Districts (Rural)
North	Delhi	Delhi	
	Punjab	Chandigarh	Rupnagar (Ropar)
	Haryana		Karnal
West	Maharashtra	Pune	Nasik
		Aurangabad	Thane
	Rajasthan		Banswara
			Dungarpur
Central-East	Chhattisgarh	Raipur	Bastar
	Jharkhand	Ranchi	East Singhbhum
	Madhya Pradesh	Bhopal	Indore
South	Karnataka	Bengaluru	Kolar
	Kerala	Kasaragod	Malappuram
	Tamil Nadu	Chennai	Madurai

Figure 1.4: Selection of Sample Cities and Districts



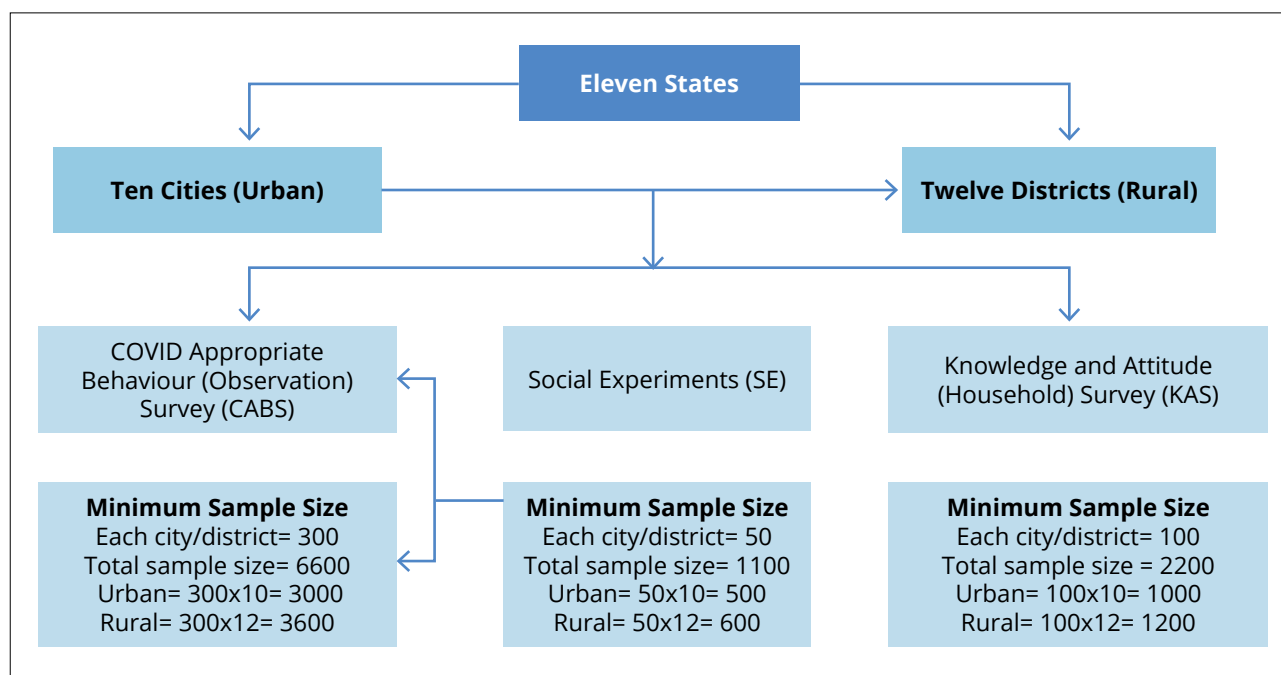
Note: Map not to scale

To capture the knowledge and practice of COVID-19 appropriate behaviours among the rural population, 12 districts were selected with a considerable size of population such as Bastar from Chhattisgarh, Malappuram from Kerala, Madurai from Tamil Nadu, Rupnagar (Ropar) from Punjab, Karnal from Haryana, Banswara and Dungarpur from Rajasthan, Nasik and Aurangabad from Maharashtra, Kolar from Karnataka and East Singhbhum from Jharkhand (Table 1.2 and Figure 1.4).

1.10 Distribution of survey samples

Samples were classified into two types i.e., urban and rural. A total of 300 samples were drawn from each city or district for the Observation survey and 50 samples for the Social Experiment (CABS). In addition, a total number of 100 sample households were drawn from each selected city or district for the Knowledge and Attitude Survey (KAS—household survey). A comprehensive flow chart of the sampling strategy for each survey by locations has been provided in Figure 1.5.

Figure 1.5: Distribution of Samples



Note: The numbers represent the minimum sample size that was to be collected from each city/district under each study. For actual sample sizes, refer to Appendix 1.1

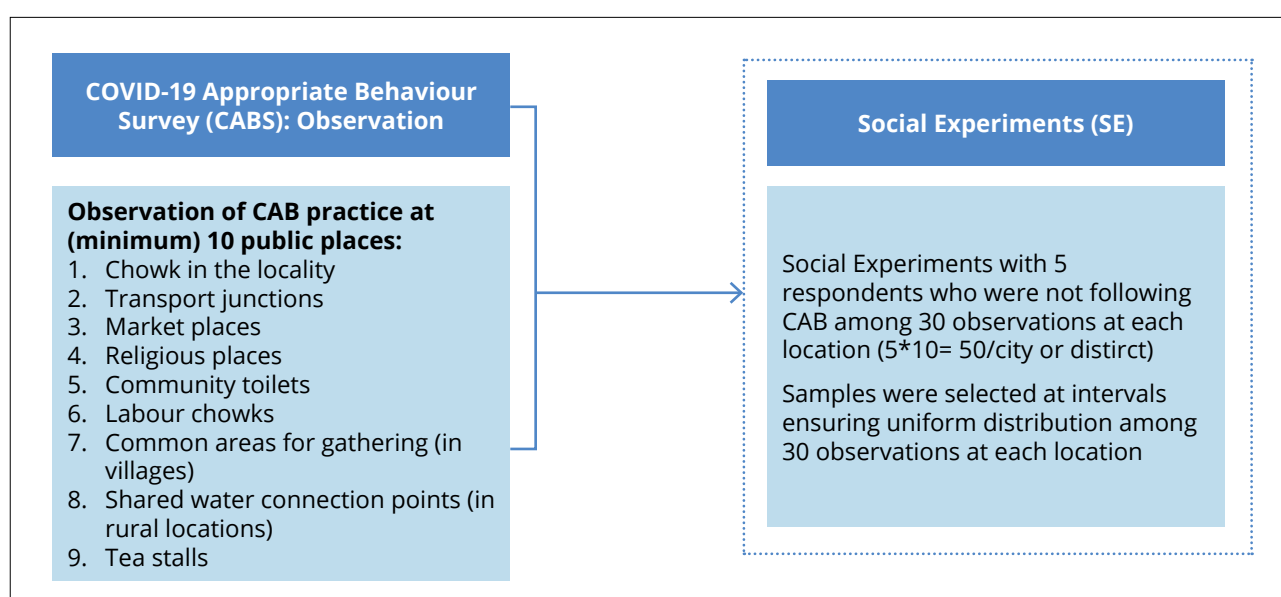
1.10.1 COVID-19 Appropriate Behaviour Survey (CABS—Observation Survey)

A minimum of 300 samples in each city/district for CABS were observed in a range of crowded and strategic places like market place, transport hub, metro stations, labour chowk etc. Figure 1.6 discusses the sampling strategy for each of the selected cities/districts in detail.

1.10.2 Social Experiments (SE)

A minimum of 5 samples (of individuals) who were not following CAB were drawn among the observed 30 individuals at each location. Therefore, 5 samples drawn from 10 observation locations aggregated to 50 (minimum) in a city/district.

Figure 1.6: Sampling Strategy in Each District/City



Note: Selection of locations was subject to the restrictions imposed by respective city/district administration. For example, if any city/district administration has closed down religious places in the city, the same will be excluded

1.10.3 Knowledge and Attitude Survey (KAS— household survey)

A minimum of 100 samples for KAS (household survey) were drawn from the residential areas in select cities/districts. Sample households in each of the locations were selected in a manner representing the socio-economic diversity of the locations after a thorough understanding of the distribution of households and settlement types. Emphasis was laid on dividing the whole area into multiple small spatial units informally and selecting households from each of them. Every n^{th} household in each of the selected spatial units was chosen for presenting the questionnaire. Figure 1.7 discusses the sampling strategy in detail.

i. Samples in cities

In each city, 30 samples were selected from slums, and the remaining 70 samples were drawn from non-slum residential areas. Among the non-slum samples, 35 have been selected from a middle-income locality of higher density and 35 samples

have been selected from a high-income locality of lower density. The main idea was to draw a representative sample of households from the survey area.

ii. Samples in districts (Rural)

In rural areas, two blocks (preferably largest) in any district and two villages (preferably large) in each block were selected. So, in a district, four villages were selected and around 25 samples were drawn from each of the four villages, capturing the socio-economic diversity of the village. The rural samples thus aggregate to 100 in any selected district.

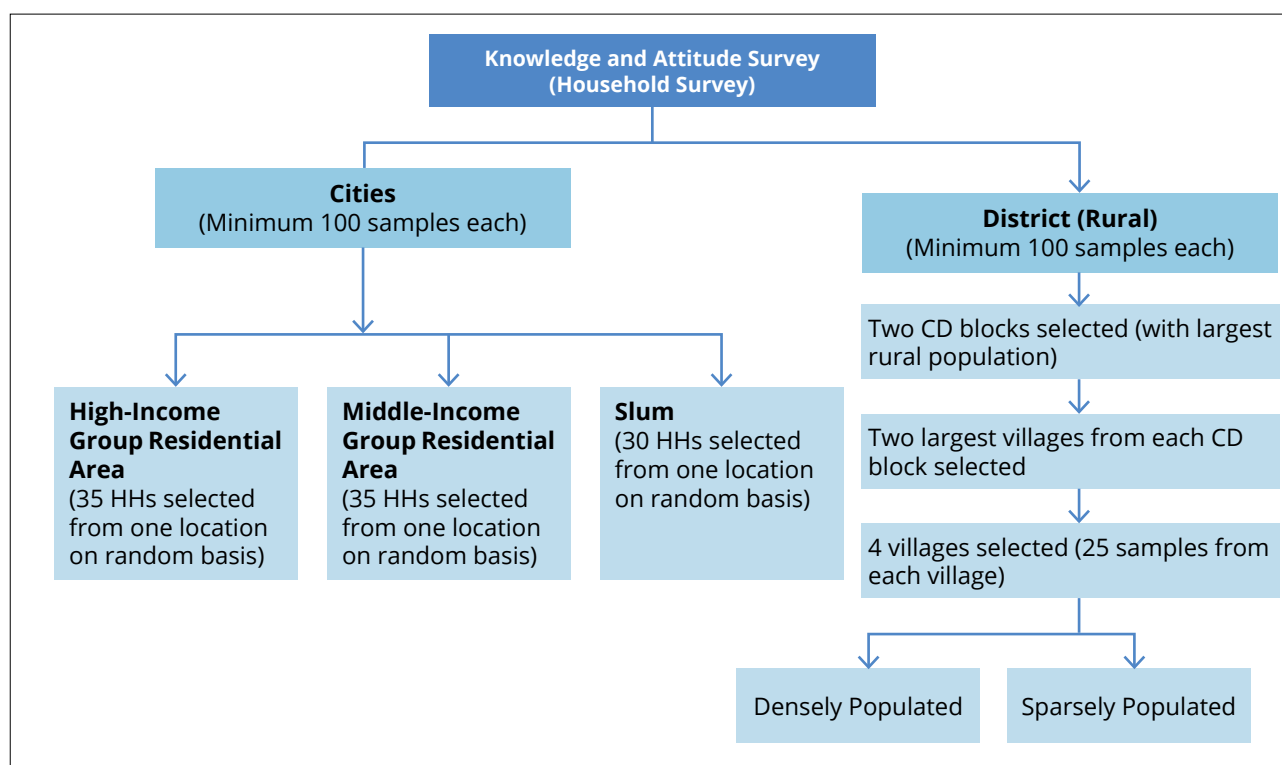
1.10.4 Exclusion criteria (rural locations)

As the rationale behind selection of rural samples was to understand COVID-19 appropriate behaviours among the rural population, villages in the peri-urban set-up or with block level administrative authorities have been excluded. These villages tend to have more external influences (influences of social media or awareness drives) and could



Location: Village Chaupal, Navinipatti Village, Madurai District, Tamil Nadu

Figure 1.7: Sampling Strategy for Household Survey



be outliers among all villages in the Community Development (CD) block. Therefore, if the largest or the second largest village of any CD block is found to have an exceptionally large number of people in comparison with other villages, those villages have been excluded. On the other hand, CABS and SE would require multiple public places such as market area/ chowk/religious place/bus stand in villages. It could be a possibility that villages with less than 500 households (HHs) may not have all these types of public places. Therefore, villages with a large number of households as well as very small villages with less than 500 HHs (outliers in this context) have been excluded in the list considered for survey. From each CD block, two villages (except outlier villages) with the largest number of rural households have been selected.

1.11 Data collection

Field personnel were instructed to visit pre-approved locations and follow COVID-19 appropriate behaviour (like wearing masks, sanitizing hands with sanitisers frequently and maintaining physical distancing) while conducting interviews and field observations throughout the survey. The health and safety of field personnel as well as of respondents were given paramount importance. Induction workshops were conducted by National Institute of Urban Affairs (NIUA) for all the personnel engaged in data collection. The data collection was done using KOBO Collect App in

July-August 2021 and a detailed user manual was circulated among all the stakeholders.

The data for the CAB and SE surveys was collected from selected public places in a city or across villages in a district. The Social Experiments (SE) were done on those individuals who were not following COVID-19 appropriate behaviour. The basic protocol of doing KAS was to visit selected households as per the sampling strategy, find out an adult informant who could act as a respondent and seek permission to do the survey.

1.12 Data analysis

Data analysis was carried out with particular emphasis on the project's objective and requirements from a policy standpoint. We use statistical and logical techniques to describe and illustrate the organised data throughout the process. The Chi-square test¹⁰ was used in statistical analysis to determine the significance of our association between observed variables. The Chi-square test was chosen because it applies to categorical variables and the method is useful when variables are nominal. To represent the data in a meaningful way, we use bivariate and tri-variate analyses in the logical technique.

In addition, we projected the district population for 2021 to estimate the COVID-19 prevalence rate. The population for the districts for 2021 was projected

using the ratio method. The ratio method projects population growth for a sub-area using population projections for a larger or parent population. The formula used for the projection was:

District Population in 2021 = (District Population in 2011/State Population in 2011) * State Population in 2021

1.13 Organisation of the report

To understand the main objectives of this study, i.e. to study COVID-19 appropriate behaviours,

knowledge and attitudes towards COVID-19 infection and vaccines among the general population of India, the findings have been discussed in the following sequence:

- Knowledge and Attitude towards COVID-19 pandemic
- Knowledge and Practice of CAB—Comprehensive findings from KAS, CAB and SE surveys
- Knowledge and Attitude towards Vaccination
- Policy Implications and Way Forward



Location: Connaught Place, Delhi



Location: Connaught Place, Delhi

10. The Chi-square test is a statistical measure of the difference between the observed and expected frequencies of the set of variables. The test can measure whether two variables are related or independent of each other. The test also measures the goodness of the fit between the then observed distribution and the theoretical distribution of the frequencies.

$$\chi_c^2 = \sum \frac{(O^i - E^i)^2}{E^i}$$

where

c = Degree of freedom

O^i = Observed Values(s)

E^i = Expected Values(s)

Knowledge about COVID-19



Wash Hand



Use Soap



Avoid Crowd



Use Mask



Avoid Shakehand

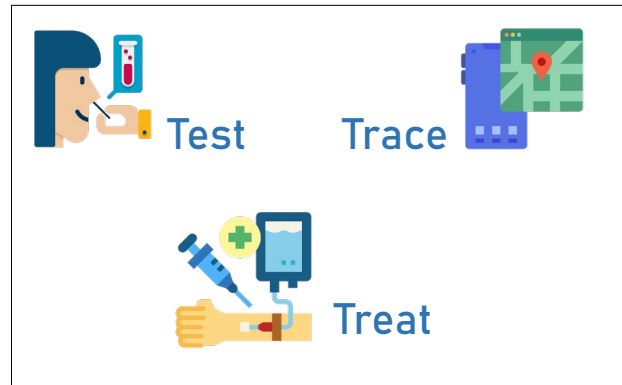


Use Disinfection

2.1. Knowledge about COVID-19

COVID-19 mitigation strategies concerned with modifying public health actions and personal behaviour begin with the timely and accurate dissemination of the information regarding the symptoms, treatment, testing etc. to the public. This would ensure that there is no misinformation and panic among the general population regarding the disease itself. To this effect, '3T Model' i.e. 'Test, Track and Treatment' strategy (Figure 2.1) is considered the most effective response measure for controlling COVID-19 infection. In addition, the World Health Organisation (WHO) has recognised the need for generating awareness related to COVID-19 and controlling the spread of misinformation, besides controlling the disease itself. Therefore, assessment of knowledge about the virus, testing and treatment is of utmost necessity.

Figure 2.1: Three-fold Strategy Adopted for COVID-19 Mitigation



With the help of a household survey (Knowledge and Attitude Survey), this section discusses differentials in knowledge as well as misconceptions about COVID-19, vulnerable groups, testing facilities and available treatments.



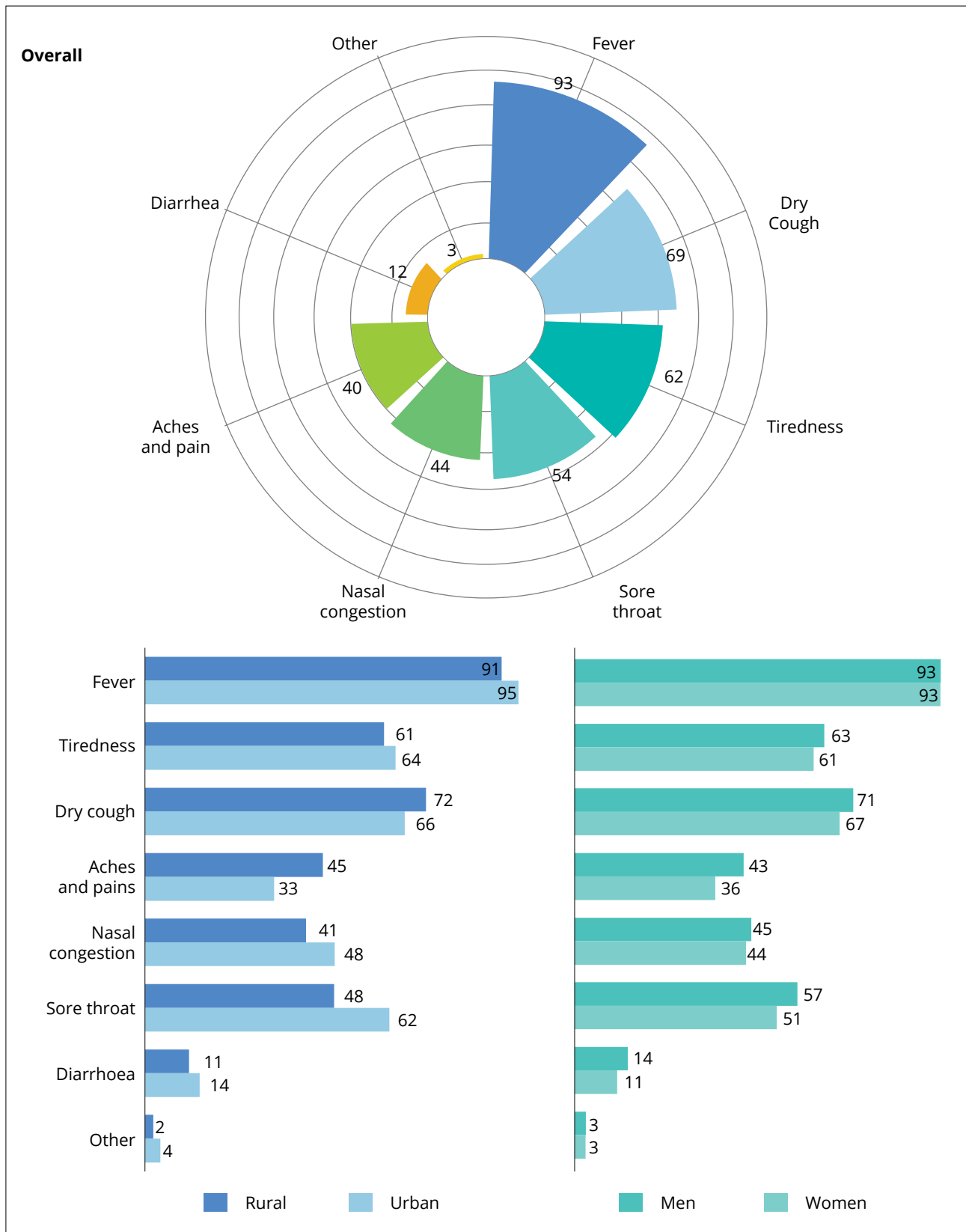
Location: Jama Masjid, Delhi

2.2 Knowledge about COVID-19 infection and risks (symptoms and high-risk groups)

2.2.1 Knowledge about COVID-19 symptoms

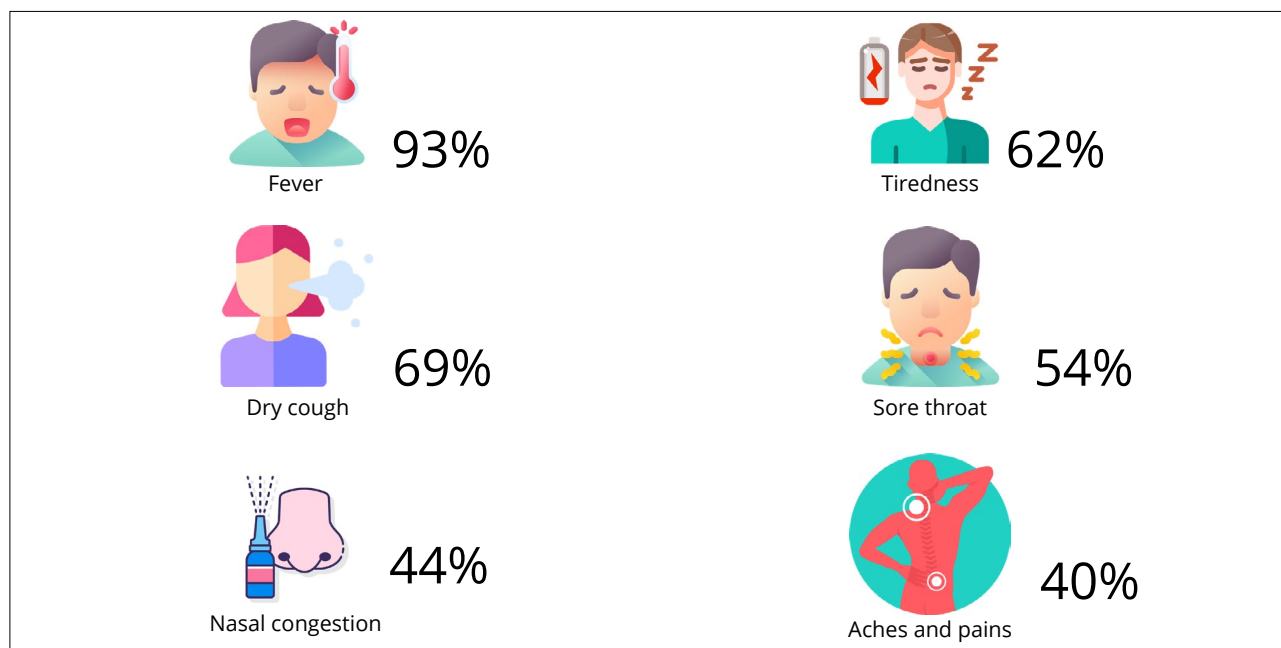
What are the symptoms of COVID-19 infection?

Figure 2.1: Share of Respondents Having Knowledge About Different COVID-19 Symptoms



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 2.2: Share of Respondents by Knowledge of Major COVID-19 Symptoms



Source: Knowledge and Attitude Survey, July-August, 2021

Which of the following symptoms do you think could be due to COVID-19 infection?

Scientific and updated knowledge about symptoms associated with COVID-19 infection is the primary step for timely detection and initiation of required treatment.

‘Fever’ was the most frequently cited symptom (93%) across gender and place of residence. Moreover, knowledge about fever as a symptom was higher among urban respondents, senior citizens (60 years and above), and respondents with higher education (graduation and above) (Appendix 2.1).

‘Dry cough’ and ‘tiredness’ were the other two most cited symptoms following ‘fever’, across gender and place of residence. The awareness level about dry cough was higher among urban respondents, men, senior citizens, and those with education levels of graduation and above (Appendix 2.1).

Knowledge about less common symptoms like nasal congestion, aches and pains and diarrhoea increased with age and education levels. *It was noted that rural respondents, women, young adults (19-30 years), and those with no or with primary education were less aware of the above mentioned symptoms (Knowledge and Attitude Survey).*

Overall, knowledge related to symptoms of COVID-19 infection was poorer among women, rural respondents, young adults (19-30 years) and

people with no education or only upper-primary education (Appendix 2.1).

Therefore, future communication drives need to be targeted at women, those who are less educated, and rural people.

2.2.2 Perception regarding higher risk population group for possible COVID-19 complications

People of all ages can be infected by the COVID-19 virus. Older people, and people with pre-existing medical conditions such as asthma, diabetes, and heart disease appear to be more vulnerable to becoming severely ill with the virus.

–World Health Organisation (WHO)

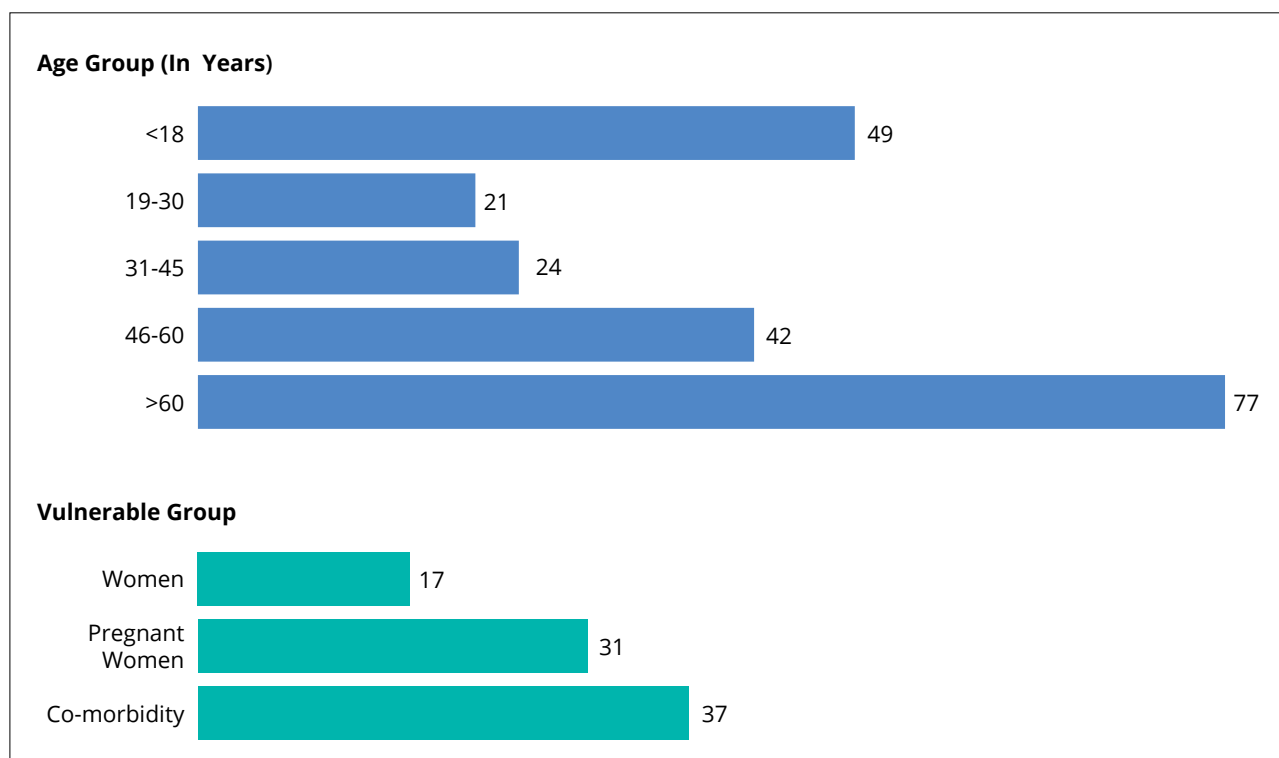
Senior citizens (60 years and above) and children (up to 18 years) are perceived as high-risk groups for COVID-19 infections and related complications.

– Knowledge and Attitude Survey

The Knowledge and Attitude Survey of households collected information on respondents’ perceptions of the high-risk group for possible complications related to COVID-19 to assess the extent of correct knowledge and misconceptions that prevail among different socio-economic groups.

Who all (out of multiple responses) are at higher risk of COVID-19 complications?

Figure 2.3: Percentage of Respondents by Reported Population Groups with Higher Risk of COVID-19 Complications



Source: Knowledge and Attitude Survey, July-August, 2021

It was seen that 'senior citizens' (60 years and above) are the most frequently stated high-risk groups for COVID-19 infections and related complications. A large per cent (77%) of the respondents perceived this age group as vulnerable to COVID-19 complications (Figure 2.3).

'Children up to 18 years' was the second most frequently stated high-risk group. Half of the respondents mentioned children as a high-risk age group for COVID-19 related complications. Children's non-eligibility for vaccination was one of the reasons why this group is perceived as most vulnerable.

It was also noted that more than 40% of the respondents cited adults aged 46-60 years as a high-risk group for COVID-19 complications. Following these three age groups, 'people with co-morbidity' and 'pregnant women' were perceived as high-risk groups for COVID-19. On the other hand, adults (19-45 years) and women were less frequently cited as high-risk groups (Figure 2.3).

2.2.3 Characteristics of respondents who perceived senior citizens (60 years and above) as a high-risk group

More than three-fourth of the respondents perceived senior citizens as one of the high-risk groups for COVID-19 complications, with no gender difference in this perception.

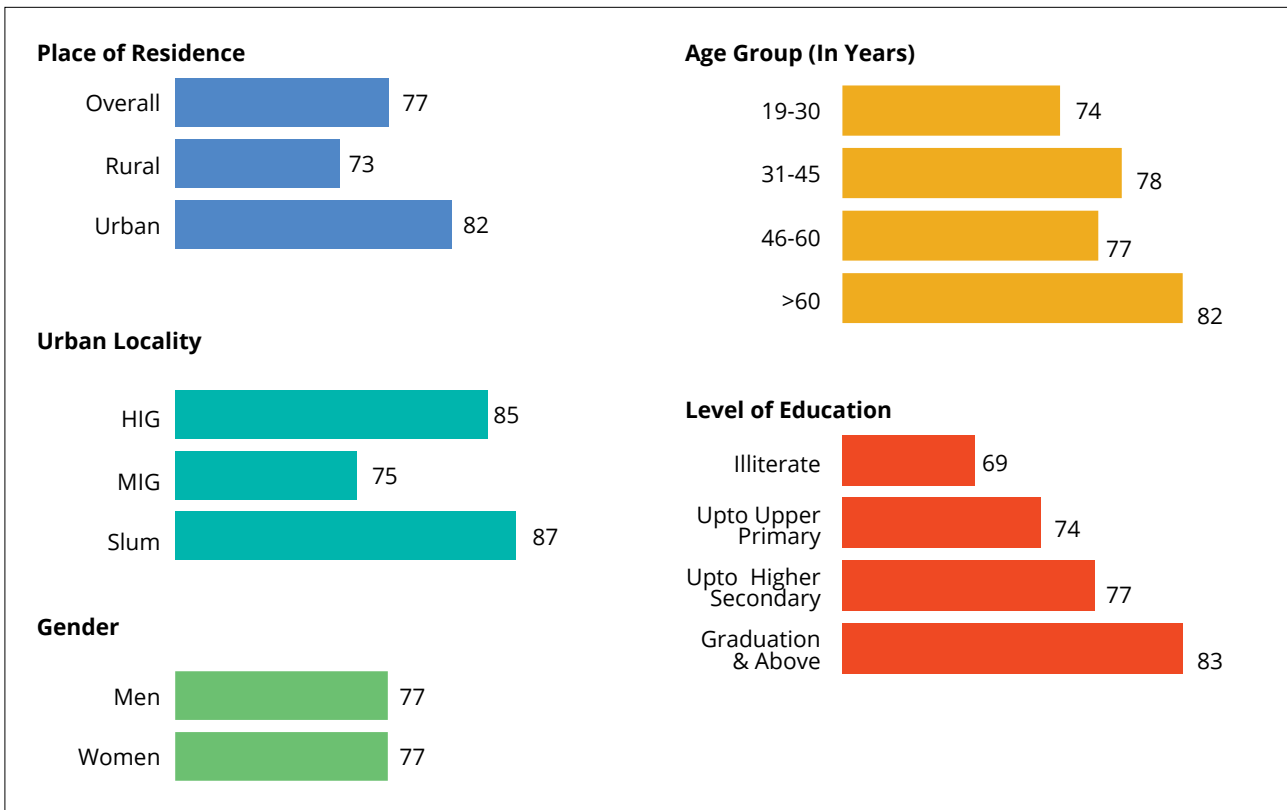
Perception of senior citizens as a high-risk group was more profound in urban areas (82%) compared to rural areas (73%).

Within urban areas, a higher share of respondents living in slums (87%) and high-income group residential areas (85%) reported this age group as a high-risk group.

Interestingly, 82% of senior citizens (respondents) considered themselves as a high-risk group. Similarly, the higher share of respondents with higher education (graduation and above) reported this age group as a high-risk group (Figure 2.4).

Sensitization drives are needed in rural areas, and middle-income group (MIG) residential areas of urban areas. Also, younger age groups and people with less education need to be sensitized against the potential complications related to COVID-19 for senior citizens.

Figure 2.4: Percentage of Respondents Who Mentioned 'Persons Aged 60 Years and above' as High-Risk Group



Source: Knowledge and Attitude Survey, July-August, 2021



Location: Kachiriyampatti Village, Madurai District, Tamil Nadu

2.2.4 Characteristics of respondents who perceived children (up to 18 years) as a high-risk group

The perception of children (below 18 years) as a high-risk group might have a far reaching adverse consequence in reopening of schools. As per the Knowledge and Attitude Survey, around half of the residents perceived children as a high-risk group.

Most importantly, a gender difference could be noted with more than half (55%) of the women reporting children below 18 years as a high-risk group.

A rural-urban difference was also noted with a higher share (60%) of the urban respondents reporting children as a high-risk group, compared to only 43% of the rural respondents (Figure 2.5).

Within urban areas, it was noted that 63% of the respondents living in slums perceived children as a high-risk group.

A similar opinion was expressed by educated respondents (secondary and higher secondary, graduation and above).

Since women are the primary care-givers in households, an effective communication strategy needs to be designed targeting them and urban residents, especially slum dwellers, for spreading scientific information related to safety of children against COVID-19.

2.3 Knowledge about nearest testing facility and available treatment

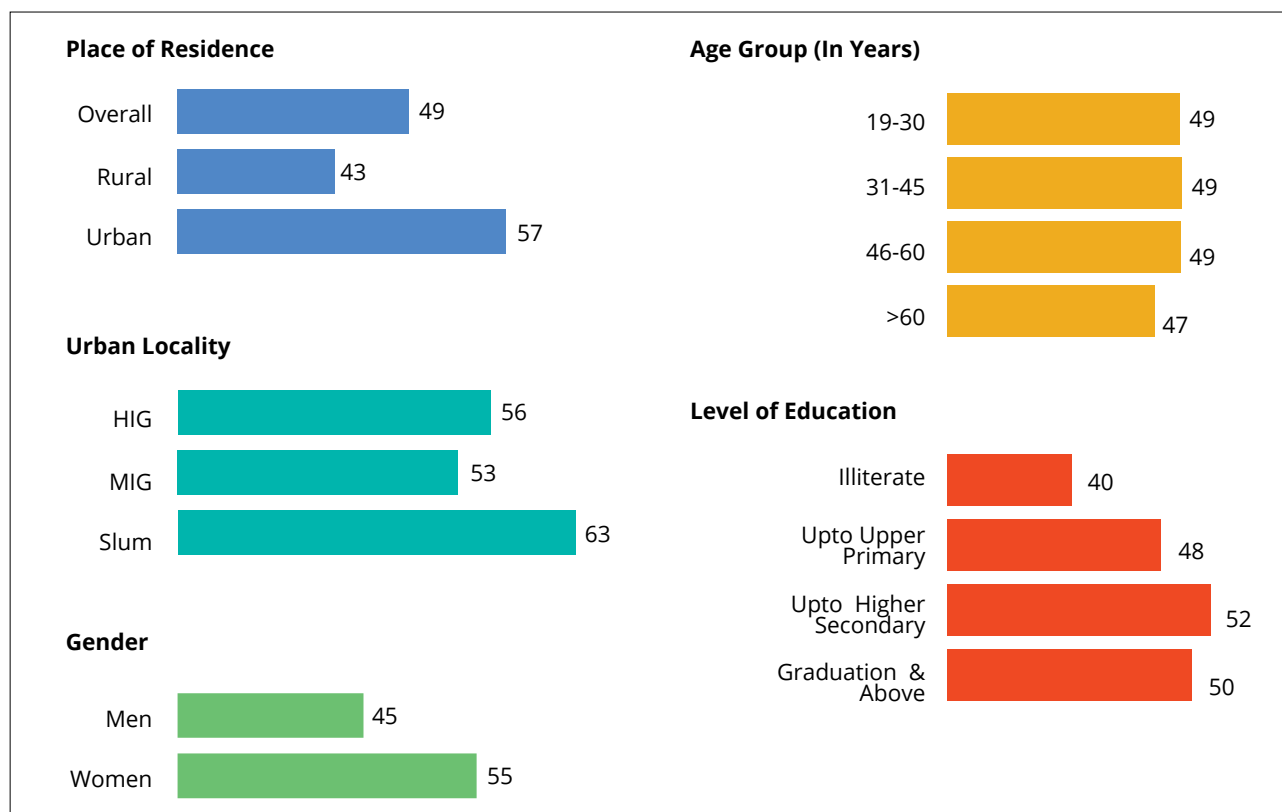
2.3.1 Knowledge about testing facilities

Do you know where the nearest COVID-19 testing facility was?

Testing is the first T of the 3T Model of the COVID-19 response measure. Increased level of testing depends on updated knowledge about testing facilities.

In the Knowledge and Attitude Survey respondents were asked if they knew about testing facilities nearest to them. It was noted that 84% of the respondents knew about the nearest testing facilities.

Figure 2.5: Percentage of Respondents Who Mentioned 'Children up to 18 Year Age' as High-risk Group



Source: Knowledge and Attitude Survey, July-August, 2021



Photo Credit: Indian Express

Gender difference existed in the knowledge level with men having better knowledge (86%) about nearest testing facilities compared to women (81%) (Figure 2.6).

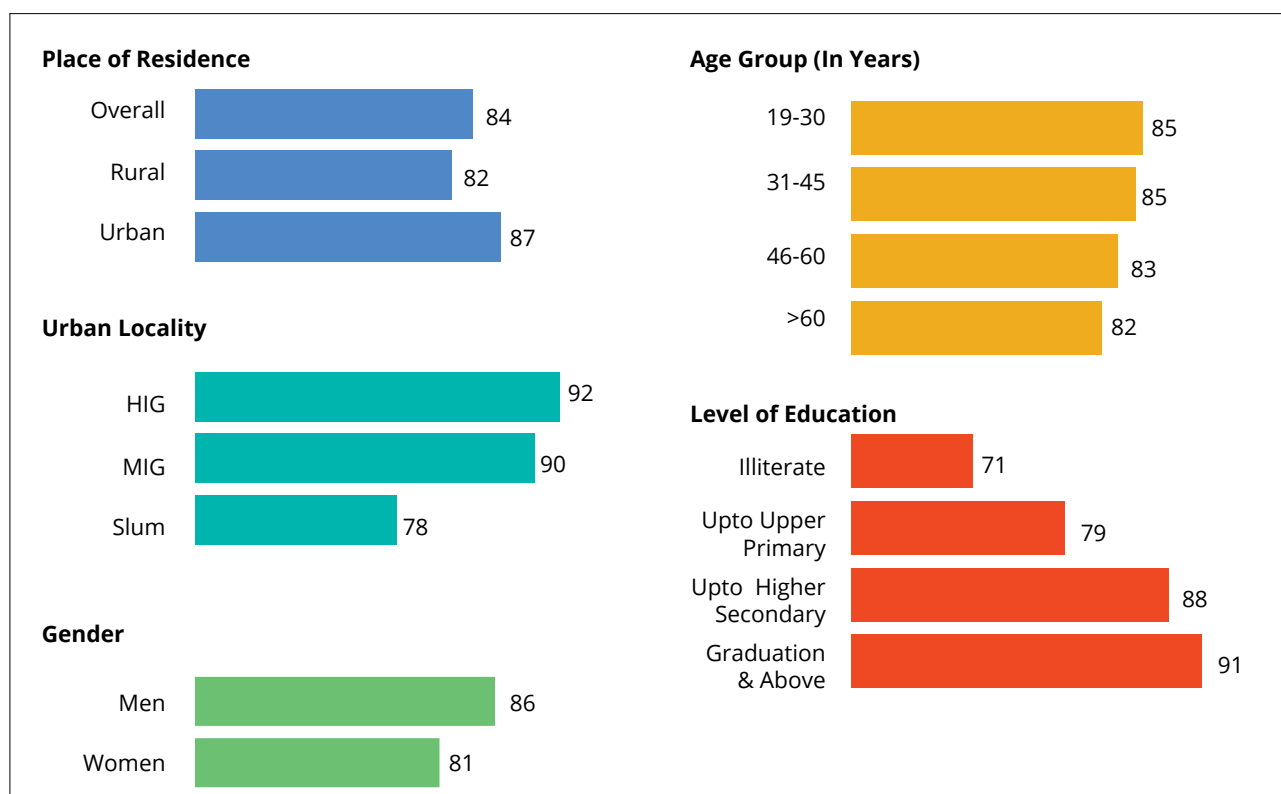
Urban respondents (87%) had better knowledge compared to rural respondents (82%) about testing facilities as a multitude of testing facilities, camps and home-collection opportunities are available in cities and towns.

Within urban areas, knowledge differentials were noted across different localities. *It was noted that 92% and 90% of respondents living in HIG and MIG residential areas respectively, knew about the nearest testing facilities because of high digital literacy and availability of home-collection facilities. On the other hand, only 78% of the respondents living in slums knew about the nearby testing facilities because of lack of private testing centres nearby and high dependence on free public facilities.*



Location: Hauz Khas Village, New Delhi

Figure 2.6: Percentage of Respondents Who Knew About Nearest COVID-19 Testing Facility

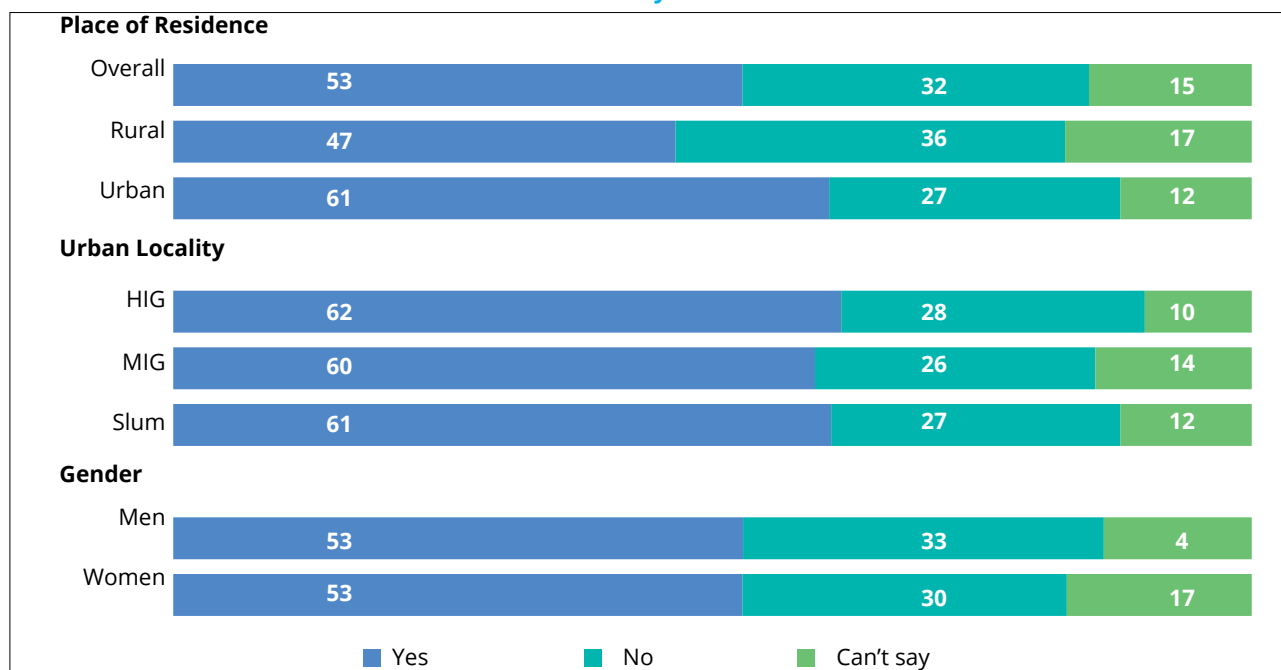


Source: Knowledge and Attitude Survey, July-August, 2021

Among various age groups, young adults (19-30 years) had better knowledge about testing facilities and senior citizens were least aware of the same.

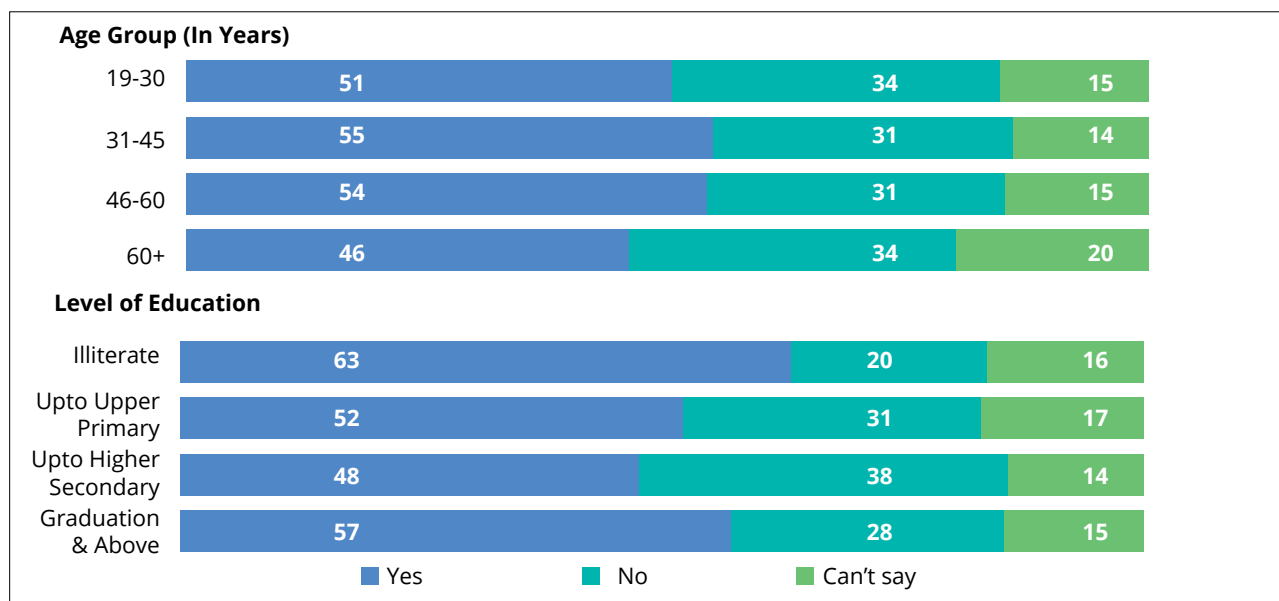
Similarly, knowledge about testing facilities was higher among respondents with at least secondary education and lowest among respondents with no education (Figure 2.6).

Figure 2.7: Percentage of Respondents with Knowledge About Available Treatments by Location and Gender



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 2.8: Percentage of Respondents with Knowledge About Available Treatments by Age Groups and Education Levels



Source: Knowledge and Attitude Survey, July-August, 2021

2.3.2 Knowledge about available COVID-19 treatment

Was there any specific treatment currently available for COVID-19 infection?

Treatment is the last and the most important T of the 3T Model of the COVID-19 response. Knowledge and Attitude Survey collected information about the survey respondents' knowledge regarding available treatment for COVID-19 infection.

It was noted that only 53% of the respondents knew about the treatment available for COVID-19. There was no gender difference noted at aggregate level in knowledge about available treatments (Figure 2.7). A further disaggregation indicated that rural women had the least knowledge about available treatments. On the other hand, 62% of urban women knew about available treatments, which was highest among all groups (Appendix 2.2). Knowledge about available treatment was much higher in urban areas (61%) compared to 47% of the rural respondents. Concentration of various tertiary health care facilities in urban areas might have led to the rural-urban knowledge differentials.

Within urban areas, knowledge about available treatments was noted to be higher among respondents of HIG residential areas (Figure 2.7).

Knowledge about available treatments was poorest among senior citizens (60 years and above) despite the age group having the highest potential of COVID-19 related complications. The knowledge level was higher among adults (31-45 years).

Interestingly, the knowledge about treatment was highest among respondents with no education, followed by those with higher education (Figure 2.8).

Better communication strategy is needed for awareness generation among senior citizens related to available treatments.

2.4. Principal sources of information for knowledge about COVID-19

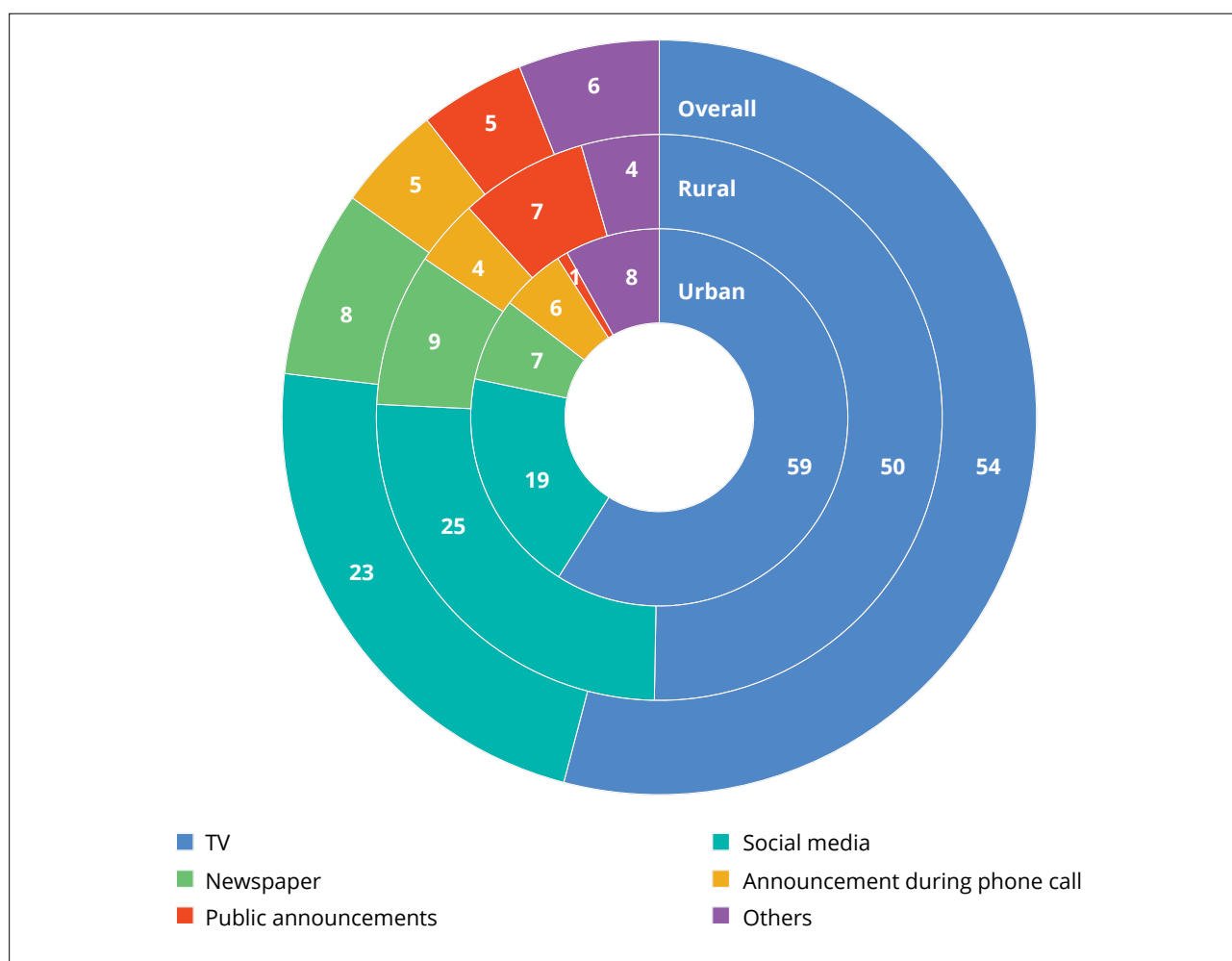
What was the principal source of information on Covid-19?

The Knowledge and Attitude Survey revealed that television (TV) played the most important role in the circulation of information related to COVID-19 and associated risk of infection, the symptoms, testing facilities, and treatment. More than half of the respondents mentioned TV as their principal source of information.

Social media was the second most important source of information as 23% of the respondents mentioned the same as their principal source of information. This showed that digital platforms play an inevitable role in awareness generation.

Following these two, 8% of the respondents mentioned newspapers as their principal source of information, both in rural and urban areas. The survey also noted that 5% of the respondents mentioned public announcements and 4% mentioned phone call announcements as their principal source of information (Figure 2.9). On the other hand, the radio, peers, and other sources

Figure 2.9: Percentage of Respondents by Reported Principal Source of Information Related to COVID-19



Source: Knowledge and Attitude Survey, July-August, 2021

were less important sources of information.

2.4.1 Profile of respondents who reported TV as their main source of information on COVID-19

The Knowledge and Attitude Survey showed that TV was the most effective medium for public health communications during COVID-19.

It was even more widely accessed in urban areas as close to 60% of the respondents depended on TV for information related to COVID-19.

Among the urban localities, slum dwellers were heavily dependent on TV (64%) for any information related to COVID-19, whereas it was less popular among HIG and MIG residents.

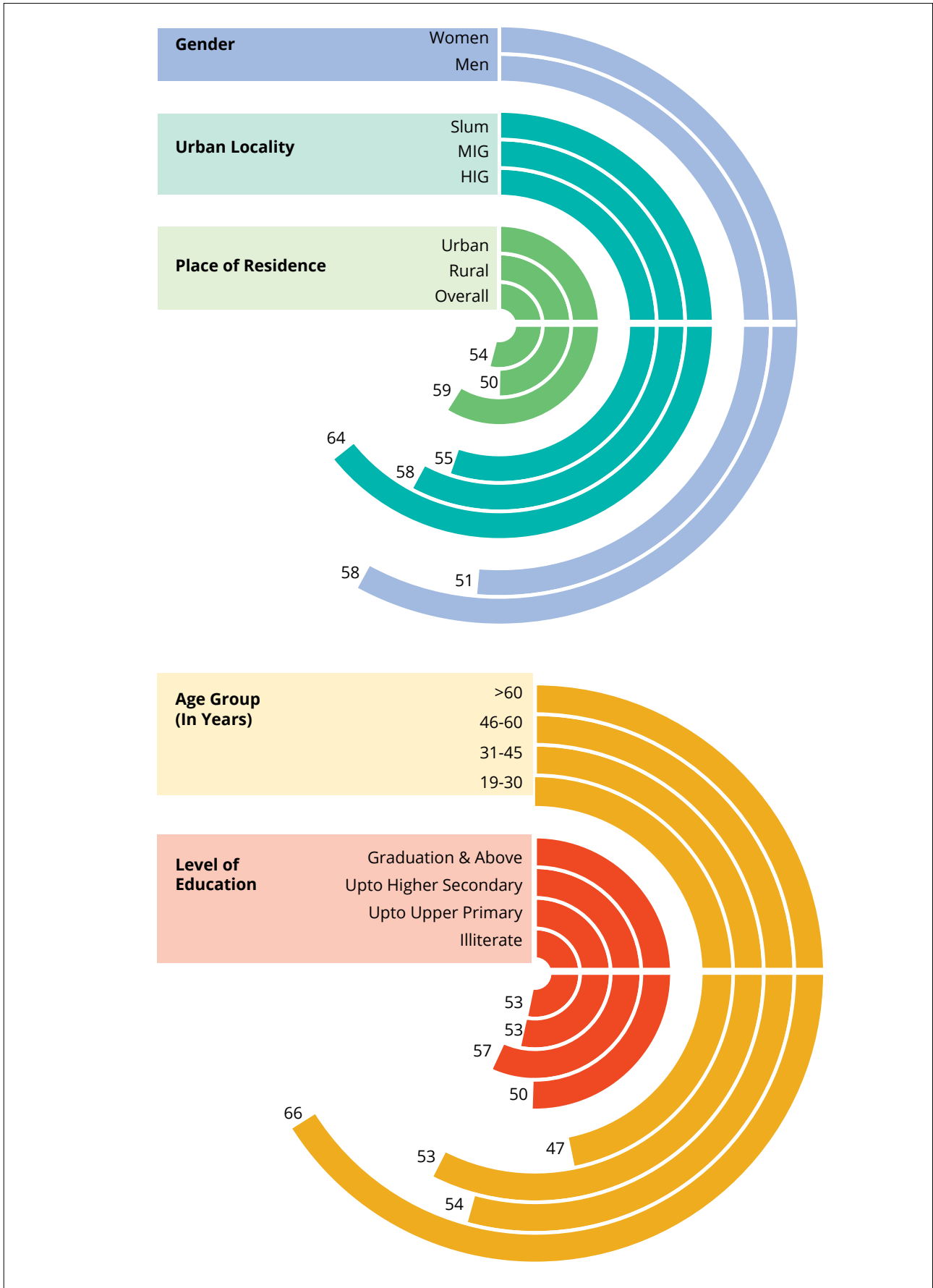
Women (58%) tended to rely more on TV as a source of information, compared to men (51%) (Figure 2.10).

Among various age groups, TV as a source of information related to COVID-19 was most important among senior citizens (66%). On the contrary, young adults (19-30 years) were less dependent on TV for COVID-19 related information.

It was noted that TV was very important for respondents with middle school and high school education (Figure 2.10).

Television can provide public health information updates to those sub-groups whose access to public spaces and outside sources is scarce and where literacy levels, both functional and digital are low. These include women, senior citizens, slum dwellers, and less-educated sections. Thus, targeting these vulnerable sections through TV may be a viable means to spread knowledge about prevention and various other aspects of the COVID-19 pandemic.

Figure 2.10: Percentage of Respondents Who Reported 'TV' as Principal Source of Information on COVID-19



Source: Knowledge and Attitude Survey, July-August, 2021

2.4.2 Profile of respondents who reported 'social media' as their main source of information on COVID-19

It was noted that social media was the second most important source of information for COVID-19.

It was even more popular in rural areas as one-fourth of the respondents mentioned social media as their principal source of information. Availability of internet connections and smart phones in rural areas have helped rural people to stay updated with COVID-19 related information. On the other hand, social media was of less importance in urban areas.

Social media as a principal source of information related to COVID-19 was more popular among men (25%) than women (19%).

Within urban areas, social media plays a very important role in awareness generation among HIG residents, while only 13% of respondents living in slums mentioned the same.

It was noted that 30% of the young adults mentioned social media as the principal source of information, while this was less popular among adults aged 46-60 years and senior citizens (60 years and above).

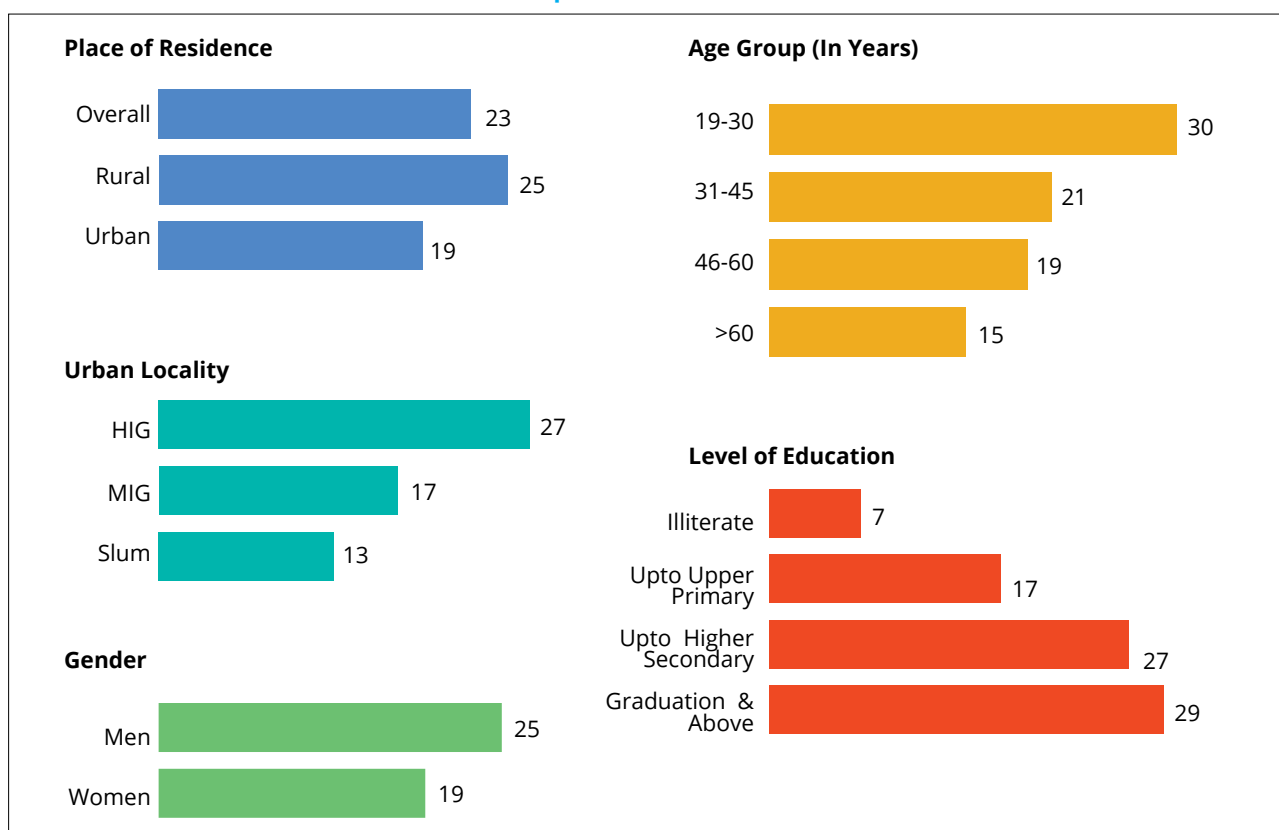
Similarly, it was more important among respondents with higher education (graduation and above) and secondary to higher secondary education because of their digital literacy (Figure 2.11).

Social media can be the most effective communication medium for youth and educated people due to its vast outreach even among the rural population.

2.5 Key takeaways

- The majority of the people are aware of only common symptoms such as 'fever' and 'dry cough'. Only urban residents and those with higher education levels are aware of less common symptoms. Knowledge about less common symptoms was much poorer among rural people, people with no education or upper primary education and young adults (19-30 years).
- Some misconceptions prevail regarding the high-risk groups. Senior citizens (60 years and above) and children (up to 18 years) were the two most frequently cited high-risk groups. While respondents across all socio-economic strata perceived senior citizens as the most vulnerable group, women and slum dwellers in urban areas were more concerned about

Figure 2.11: Percentage of Respondents Who Reported 'Social Media' as Principal Source of Information on COVID-19



Source: Knowledge and Attitude Survey, July-August, 2021

children, which might have had an adverse impact on the decision to open schools.

- Three-fourths of the respondents knew about the nearest testing facility. However, knowledge level was lower in rural areas, among women, senior citizens, slum dwellers and people with little or no education.
- Knowledge related to available treatment of COVID-19 and hospital facilities was still below satisfactory level, which needs urgent policy attention. Knowledge related to available treatment was poorer in rural areas (particularly among rural women), among senior citizens and people with school education. There was also a need for programmatic intervention targeting slum dwellers and people with no education for improving communication regarding the most effective and affordable treatments available.
- It was noted that TV and social media were the two most important sources of information related to COVID-19. TV was also more popular among women, slum dwellers, senior citizens, and respondents with school education or no education. On the other hand, social media was more popular in rural areas, among men, young adults, and respondents with higher education.

2.6 Recommendations and policy interventions

- Programmatic interventions are needed for awareness generation related to the disease, testing facilities, and available treatments targeting rural people, slum dwellers in urban areas, women, senior citizens, and people with no or little education.
- Sensitization of senior citizens regarding testing facilities and available treatments is an urgent policy concern as they are at much higher risk of COVID-19 infections and related complications.
- TV is found to be the most important source of information for a wider audience including women, senior citizens, and people with less education. Therefore, the right and scientific information should be communicated through TV advertisements, flash messages, short-duration announcements, and programmes.



Location: Kasaragod, Kerala

Knowledge and Practice of COVID-19 Appropriate Behaviour (CAB)



Wash Hand



Use Soap



Avoid Crowd



Use Mask



Avoid Shakehand



Use Disinfection

3.1 Knowledge and practice of COVID-19 appropriate behaviour (CAB)

The Ministry of Health and Family Welfare (MoHFW), Government of India, advocates the adoption of preventive measures and practices in fighting the spread of the COVID-19 virus. In this regard, they have propagated the practice of several behavioural measures which are critical. Evidence-based knowledge among the general public and a positive attitude regarding behaviours that could potentially reduce the speed and current burden of the pandemic have long been assumed as critical players in pandemic mitigation strategies.

This chapter assesses the extent of knowledge and adherence to various preventive measures of COVID-19. The Knowledge and Attitude Survey (KAS) collected information on respondents' knowledge and practice of various preventive measures including the practice of hygiene and availability of water, sanitation and hygiene (WASH) amenities. It also tried to understand the differentials between self-reporting of the practice of COVID-19 appropriate behaviour and ground realities of the same. Using the COVID-19 Appropriate Behaviour Survey (Observation Survey), this section tries to assess the actual practice of CAB in various public places. It also tries to understand barriers to such practices with the use of Social Experiments.

3.2 Knowledge about COVID-19 preventive measures

What are the preventive measures to stop the spread of COVID-19?

'Wearing masks', 'maintaining physical distancing' and 'washing of hands frequently with soap' were three most frequently cited preventive measures, across gender and both in rural and urban areas. 'Self-quarantine' and 'avoiding social/public gatherings' were less frequently cited as preventive measures.

Almost 80% of respondents were aware of preventive measures such as wearing of masks, maintaining physical distancing and washing hands.

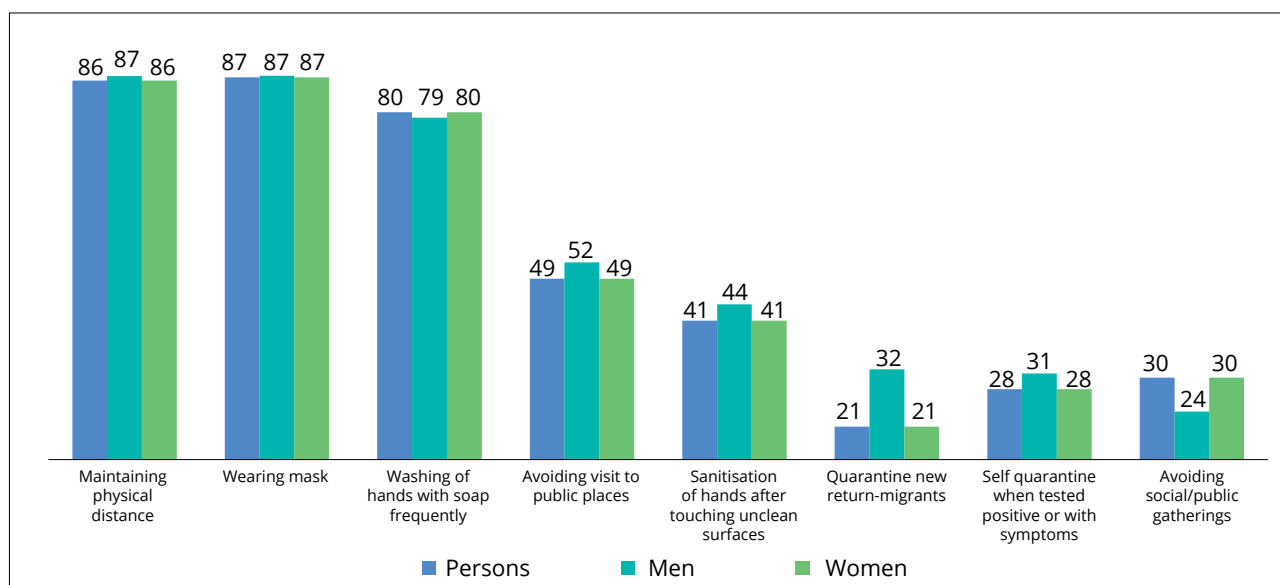
It was noted that men have a better knowledge about less frequently cited measures (mostly related to social behaviour) (Figure 3.1). Knowledge about preventive measures increases with the education level. It was seen that knowledge about self-hygiene, that is, 'washing hands with soap' and 'sanitization of hands after touching an unclean surface' was distinctly higher among respondents with a higher education level (graduation and above) (Appendix 3.1).

It was noted that respondents with school education (up to upper primary and secondary and higher



Location: Thiruvalli Village, Malappuram District, Kerala

Figure 3.1. Share of Respondents by Reported Knowledge of Preventive Measures of COVID-19



Source: Knowledge and Attitude Survey, July-August, 2021

secondary education) had poorer knowledge about less frequently cited measures (mostly related to social behaviour).

Interestingly, illiterate respondents had better knowledge about quarantine of returning migrants and avoiding a visit to public places (Appendix 3.1). This may be attributed to the widespread communication drives targeting this section of society.

Categorisation of different types of preventive measures

Most effective measures: wearing masks, maintaining social distancing

Personal hygiene: washing hands with soap frequently, sanitization of hands

Social behaviour: Quarantine (self and especially migrants), avoiding visit to public places and social gatherings

3.3. Availability of WASH facilities and practice

3.3.1. Availability of water and soap within premises

Self-hygiene such as frequent cleaning of hands and cleaning of frequently touched surfaces at home are the critical measures.

The Knowledge and Attitude Survey reported that 96% of respondent households had access to water. Among them, 94% reported having the availability of water and soap for handwashing.

It was noted that access to water was marginally

higher in urban areas (98%), especially in HIG and MIG residential areas, whereas it was the poorest in slums.

Among households with access to water, the availability of WASH facilities was higher in urban areas (98%) and poorest in slums (among all urban and rural localities). Therefore, slum households had a lower probability of practising CAB, particularly related to the maintenance of self-hygiene (Figure 3.2).

3.3.2. Hand washing practice during COVID-19 pandemic

How frequently do you wash your hands with soap?

Respondents were asked about the frequency of handwashing during the COVID-19 pandemic as it is one of the most critical preventive measures.

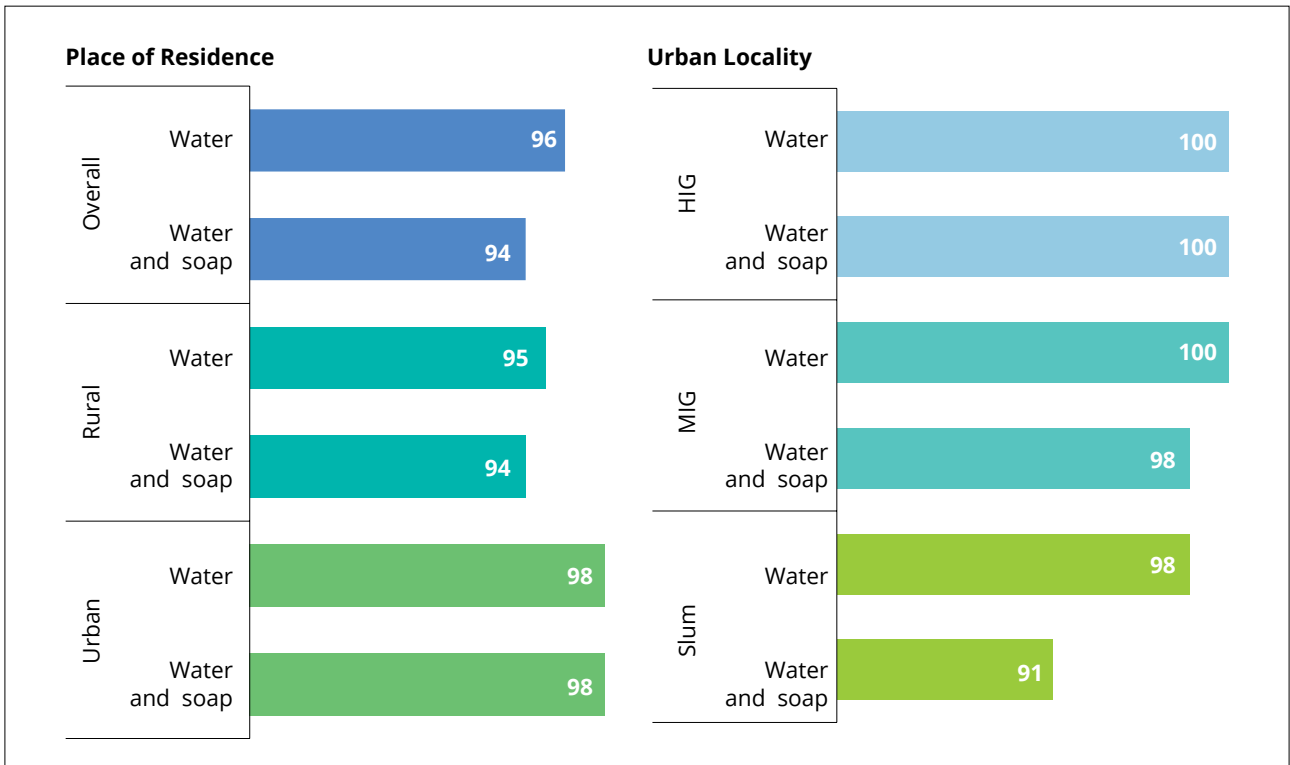
It was noted that 24% of the respondents mentioned that they washed their hands every hour and 62% mentioned that they washed their hands multiple times (4-5 times) a day.

The share of respondents who reportedly cleaned hands every hour was noted to be higher in urban areas. In rural areas, 67% of the respondents mentioned that they washed their hands multiple times a day, particularly before meals.

More men reported washing hands every hour, at least multiple times, compared to women.

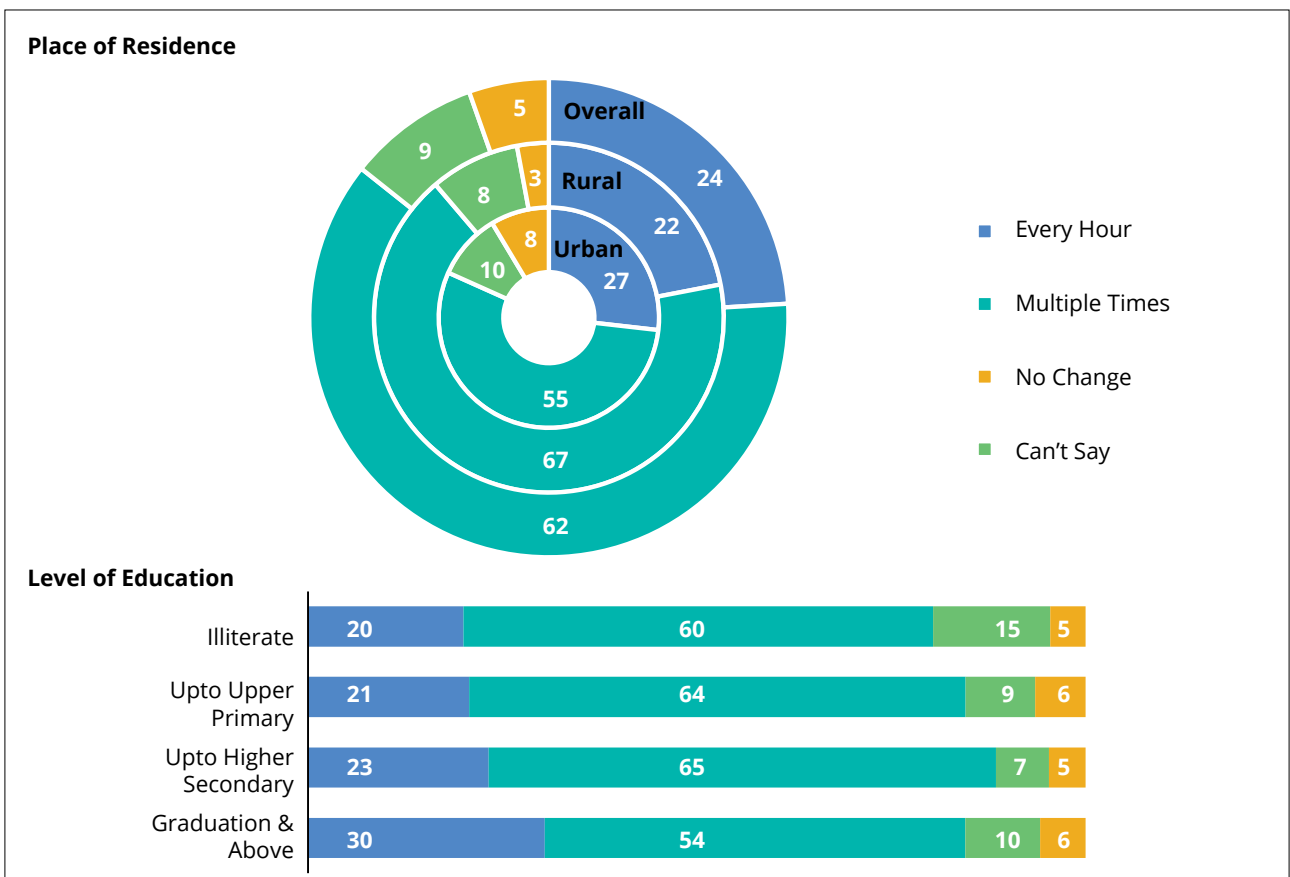
The practice of frequent handwashing (every hour) was noted to be much higher among educated

Figure 3.2: Share of Households Having Access to Water and Availability of WASH Facility



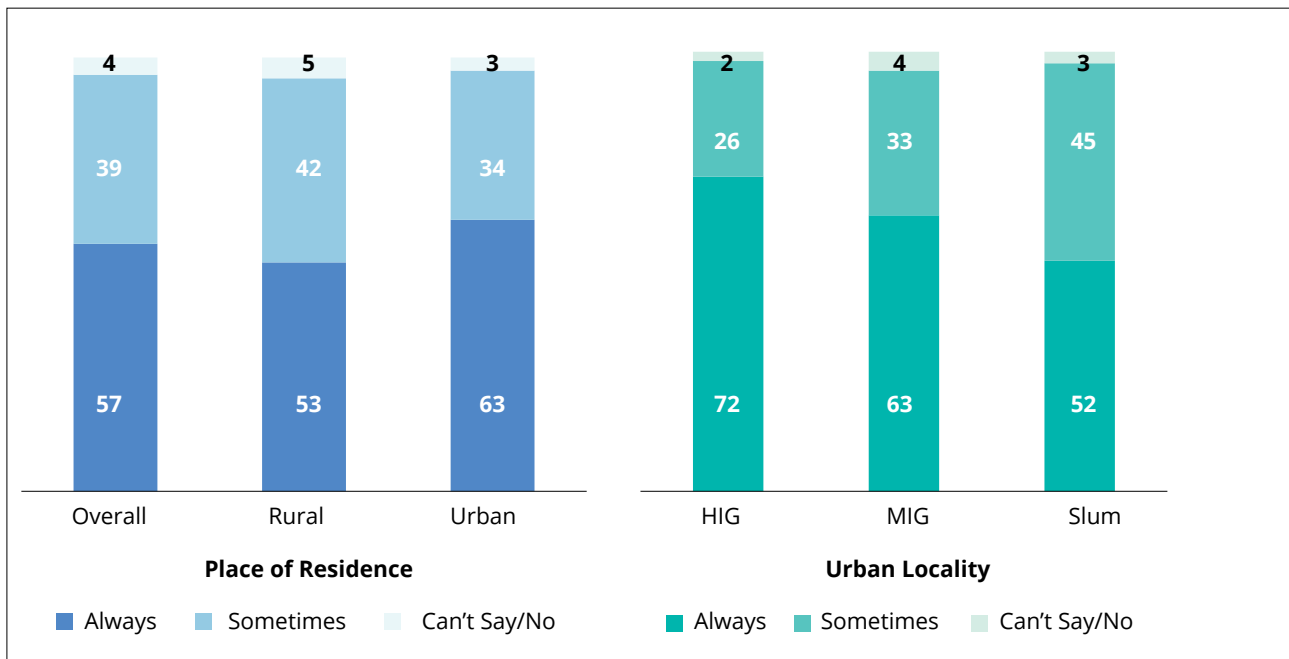
Note: N= 2480; Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.3: Share of Respondents by Frequency in Handwashing Practices During COVID-19



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.4: Share of Households by Practice of Washing Hands after Returning Home



Source: Knowledge and Attitude Survey, July-August, 2021

respondents (graduates and above).

The share of respondents with no change in handwashing practices or without knowledge about the same was noted to be higher among women and illiterates, which needs targeted awareness drives.

Do most members of HHs wash their hands with soap when they come from outside?

The household survey collected information on handwashing practice in the household after one returns home.

It was noted that 57% of the respondents mentioned that the majority of the household members always wash their hands after returning home.



Location: Kirti Nagar, Delhi



Location: Vysarpadi Slum, Chennai, Tamil Nadu

The practice of handwashing after returning home was lower among rural households compared to urban areas.

Within urban areas, the practice of handwashing was poorer in slum households (52%) compared to HIG (72%) and MIG (63%) households.

The practice of handwashing also depends on the socio-economic condition of the household. The practice was much higher among regular salaried households (65%) compared to daily wage earners (50%).

Handwashing practice after returning home depends on availability of WASH facilities within premises, both in rural and urban areas. Only 14% of households without exclusive access to water were able to practise handwashing frequently. Rural households without exclusive access also found it more difficult to wash hands after returning home (Appendix 3.2).

3.4. Self-reported frequency of practice of different preventive measures

3.4.1. Frequently cited preventive measures

'Wearing mask', 'maintenance of physical distance outside home' and 'cleaning of hands' were three most frequently practised preventive measures.

On the other hand, 'avoiding family functions' was the least frequently practised preventive measure (as per self-reporting) (Figure 3.6).

3.4.2. Number of preventive measures practised

It was noted that 14% of the respondents self-reported of not practising CAB considered in the study (Figure 3.7).

The share of respondents who reported not practising CAB was higher in urban areas compared to rural areas. Within urban areas, self-reporting regarding not practising CAB was higher in both slums and HIG residential areas (Appendix 3.3).

It was noted that self-reporting of CAB was higher among women compared to men. It was marginally higher among illiterates, but education level had no significant impact on self-reporting (Appendix 3.3).

3.4.3. Self-reported and observed practice of CAB—'wearing masks in public places'

There was a marked difference between level of knowledge, self-reported levels of wearing masks and observed levels of practice of the same in public places.

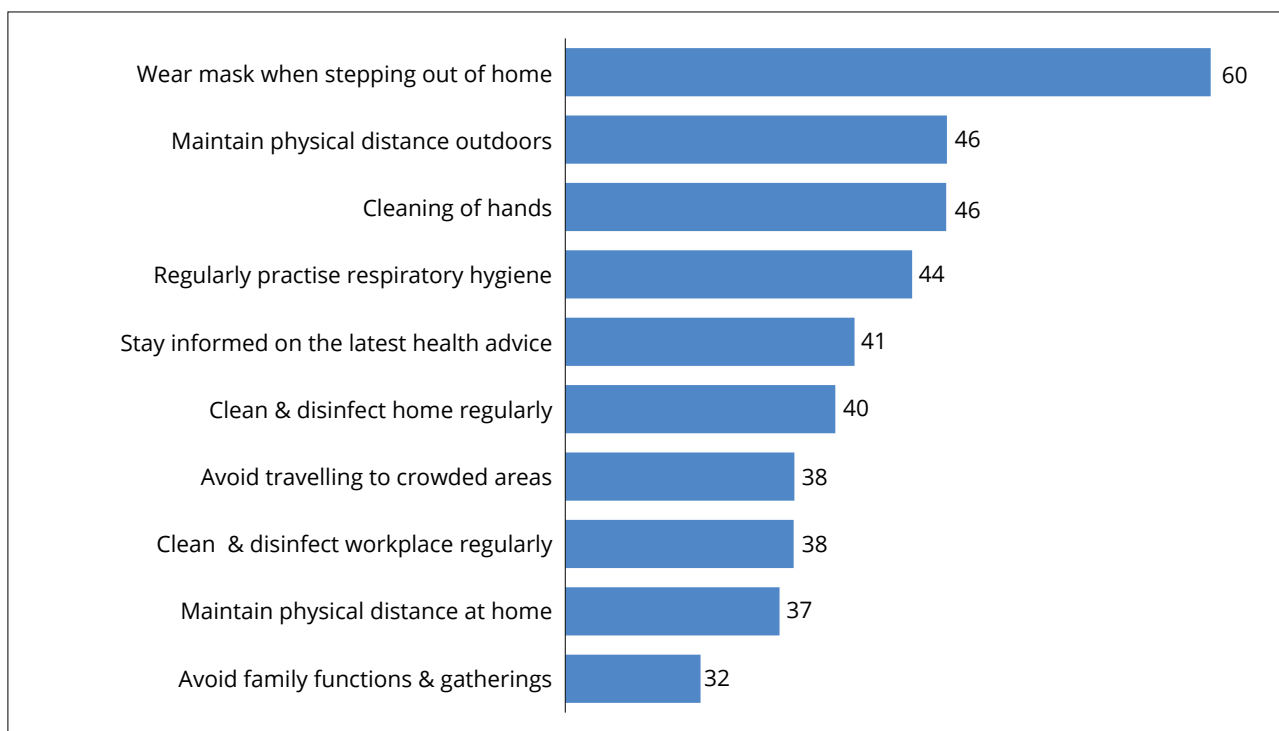
As per the Knowledge and Attitude Survey, overall 87% of the respondents knew about wearing masks, and 76% reported wearing them very frequently (Figure 3.8). However, in practice, only 34% were observed to be doing so in public places (according to the Observation Survey, CABS) (Figure 3.9).

The difference between self-reporting and observed practice was very high in rural areas, among men and in the age group of 46-60 years.



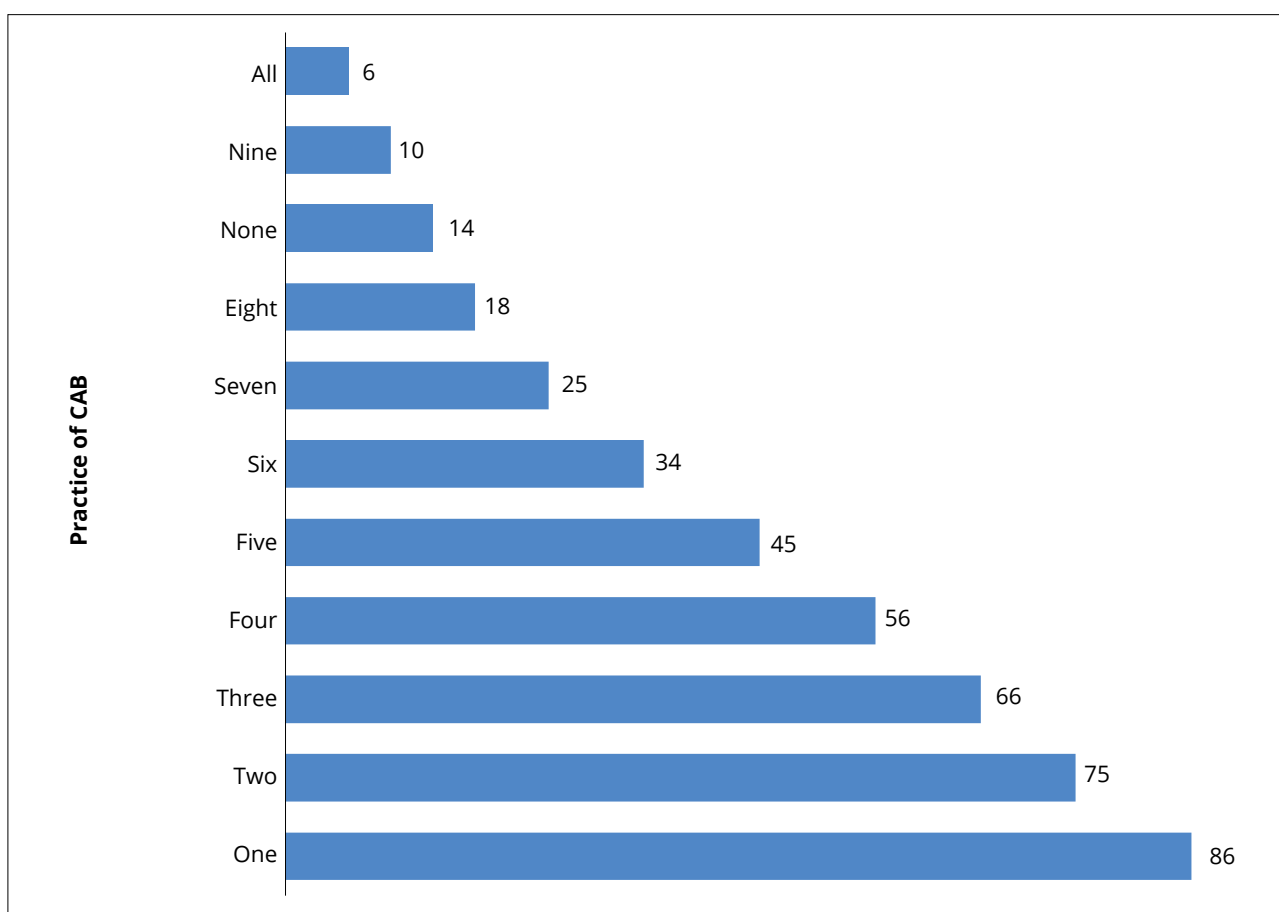
Location: Indore, Madhya Pradesh

Figure 3.6: Share of Respondents by Self-reporting of Always Practising Various COVID-19 Preventive Measures



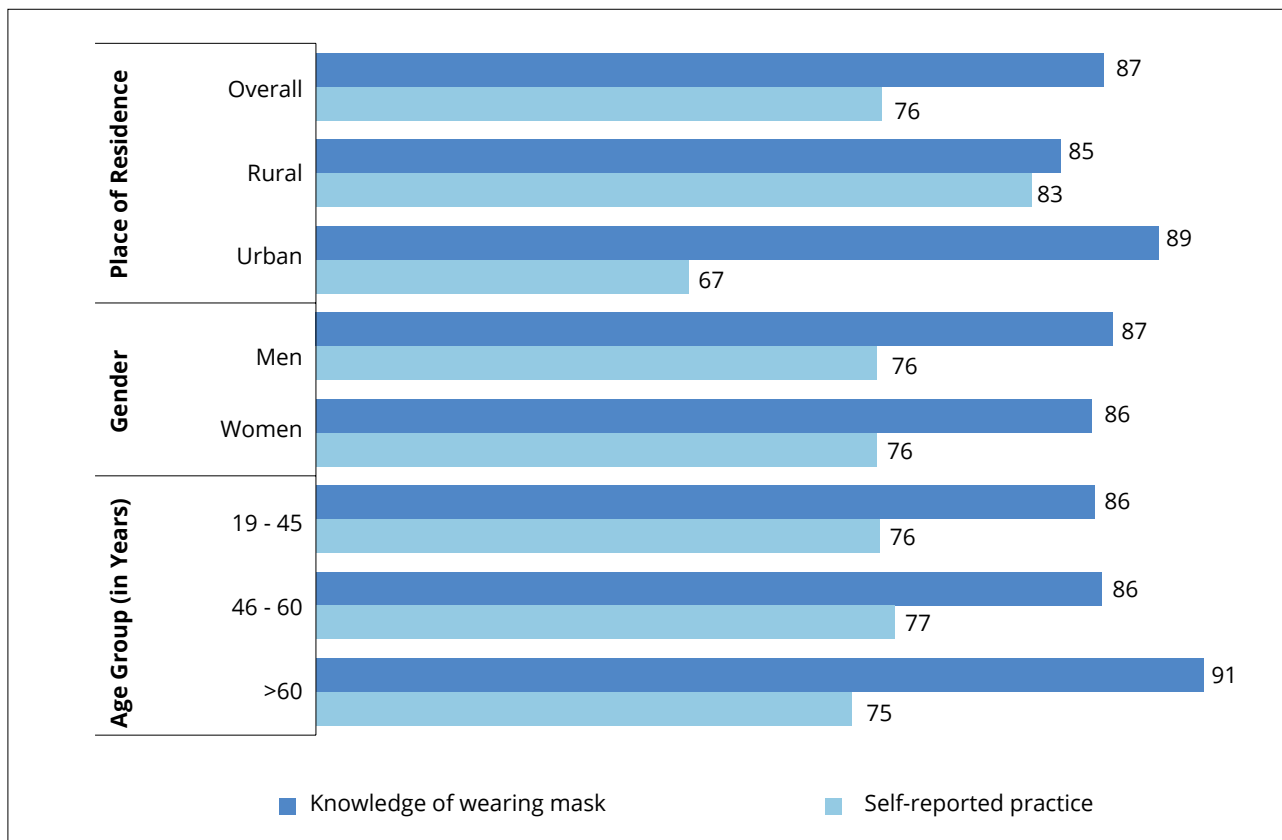
Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.7: Share of Respondents by Number of COVID-19 Preventive Measures Practised



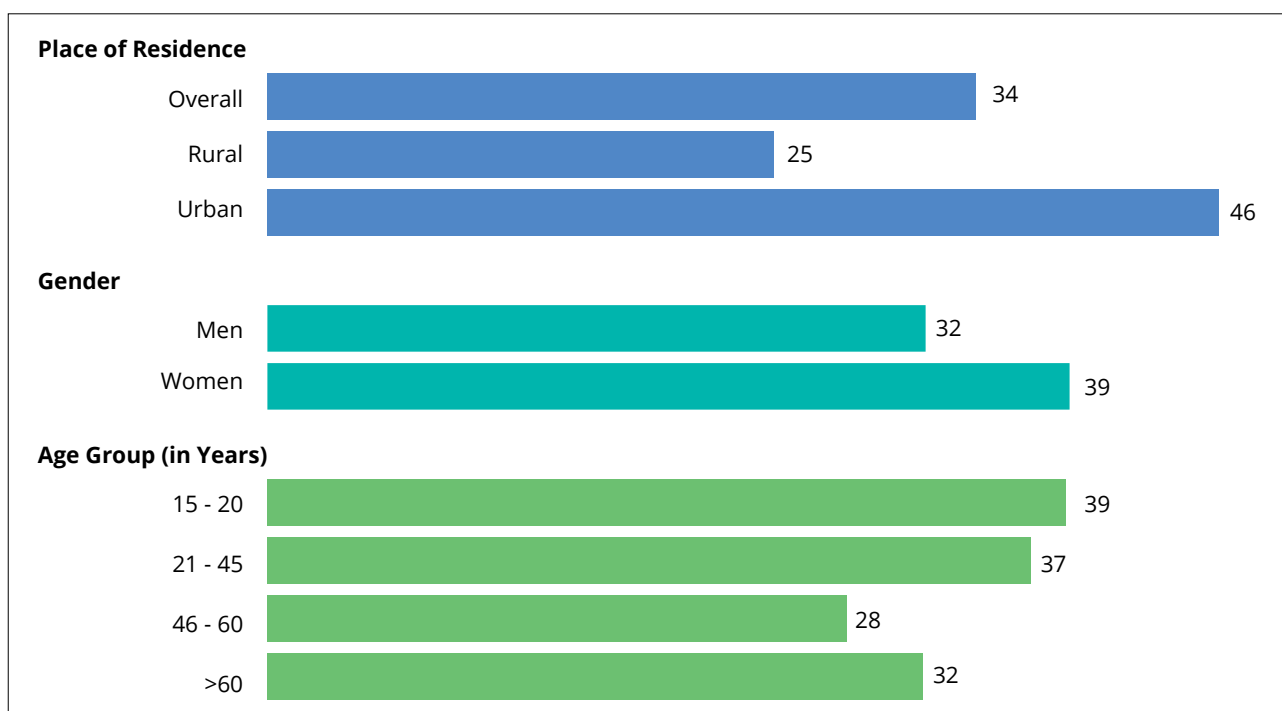
Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.8: Share of Respondents Who Have Knowledge of 'Wearing Mask' as Preventive Measure and Who Reported 'Wearing Mask' Always or Often



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.9: Share of Observed Individuals Who Are Wearing Mask in Public Places



Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Box 3.1: Observed Practice of Wearing Masks Properly

Only one-third of the respondents were observed to be wearing masks properly in public places. The practice was much lower in rural areas (25%) compared to urban areas (46%).

Gender differences were observed in the practice of wearing masks. Women were more likely to wear masks properly in public places (39%) compared to men (32%).

The practice of wearing masks was observed to be lowest in the age group of 46-60 years followed by senior citizens (60 years and above) (Figure 3.9).

Among different types of public places, the practice of wearing masks was observed to be very low in religious places (both in rural and urban areas). Tea stalls in rural areas, community toilets, and open markets in urban areas were the other places where the practice was observed to be low (Appendix 3.5 and 3.6).

Among rural districts, the practice of wearing masks was observed to be the least in Madurai, Karnal, Indore, and Bastar. Among the cities, the practice was very low in Raipur and Bhopal (Appendix 3.7 and 3.8).

What are the problems you face when you wear a face cover/mask?

The Social Experiments demonstrated that among those not wearing masks properly, 'difficulty in breathing/suffocation' was the most frequently stated reason for not wearing a mask in public across locations and gender (Appendix 3.4). 'Pain in ears' and 'itching/irritation on nose' were the second and third most cited reasons.

3.4.4. Self-reported and observed practice of CAB—'maintaining physical distance'

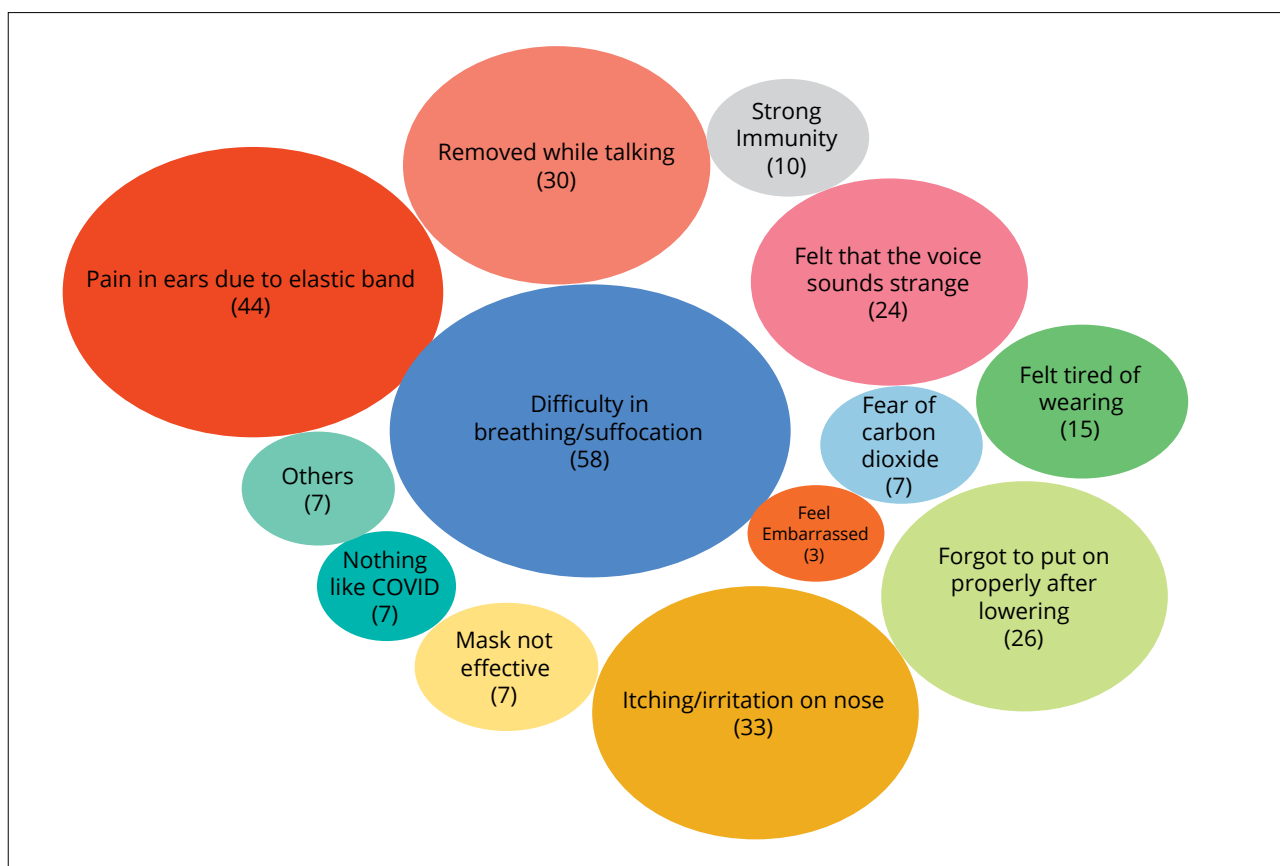
There was a notable difference between knowledge, self-reporting, and observed ground realities in 'maintaining physical distance'.

According to the Knowledge and Attitude Survey, 86% of the respondents knew they should keep a physical distance from others and 73% reported that they always maintain physical distance in public places (Figure 3.11). On the other hand, the Observation Survey (CABS) showed that only 39% individuals maintained 2 metres of physical distance (as mandated) (Figure 3.12).



Location: Vijay Nagar, Delhi

Figure 3.10: Share of Total Respondents by Types of Challenges Faced



Note: Figures in brackets are per cent share
Source: Social Experiment, July-August, 2021

The difference between self-reporting and actual practice was very high in rural areas compared to urban areas. A higher difference in self-reporting and observed practice was noted among young adults (21-45 years) (Figures 3.11 and 3.12).

Notably, both self-reporting and observed practice were lower among women compared to men, which is a matter of concern.

Box 3.2: Observed Practice of 'Maintaining Physical Distance'

According to the Observation Survey (CABS), only 39% individuals observed 'maintaining physical distance' of at least 2 metres. The practice of physical distancing is much lower in rural areas (36%) compared to urban areas (43%) (Figure 3.12).

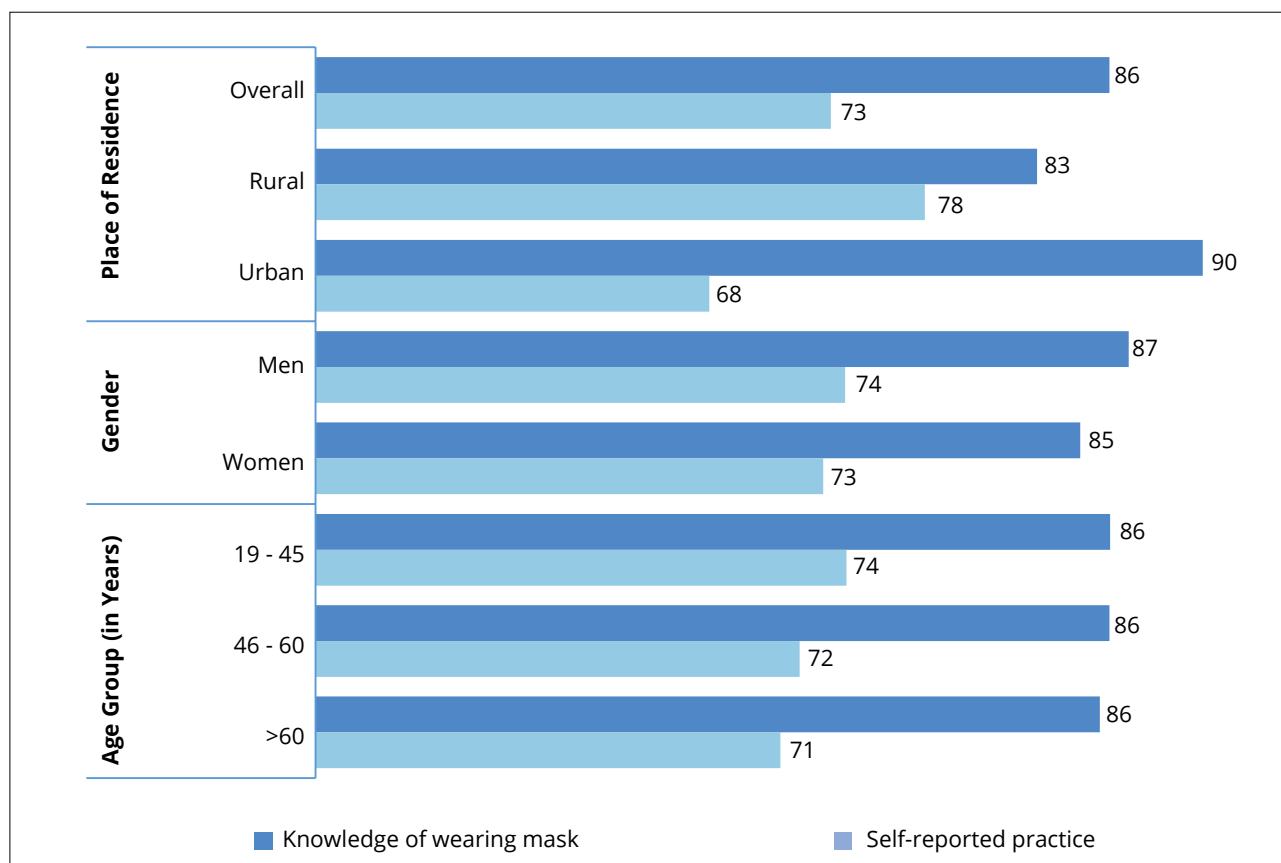
The practice is observed to be marginally lower among women (38%) compared to men (39%). A further disaggregation reveals that the practice is higher among women in rural areas. On the other hand, a distinctly higher share of urban men observed maintaining physical distance (Appendix 3.9).

This practice is higher among mature adults (46-60 years) and senior citizens (60 years and above), which indicates that these age groups adhere to the safety norms, while the sensitization drive targeting youth is needed as it is lowest among adolescents (15-20 years) (Figure 3.12).

Maintenance of physical distancing is observed to be much lower in religious places (both in rural and urban areas). It is also lower in tea stalls in rural areas and open markets in urban areas (Appendix 3.10 and 3.11).

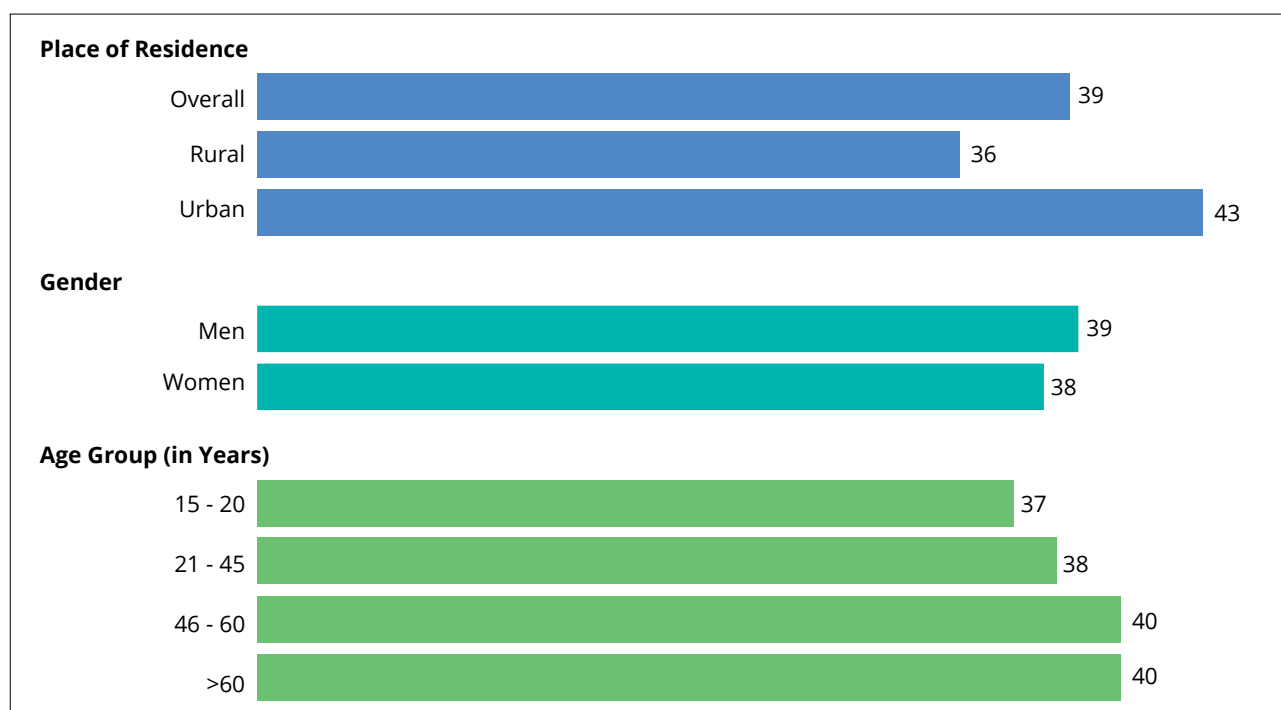
The practice of physical distancing is very low in Indore (3%) among all rural districts. Among all the cities, maintenance of physical distance is lowest in Raipur (Appendix 3.12 and 3.13).

Figure 3.11: Share of Respondents Who Have Knowledge of 'Maintaining Physical Distance' and Who Reported Practising the Same



Note: All respondents are above 18 years. Therefore, the category 15-20 years (comparable CABS) cannot be estimated; N= 2480
 Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.12: Share of Observed Individuals Who Were Observed 'Maintaining Physical Distances'

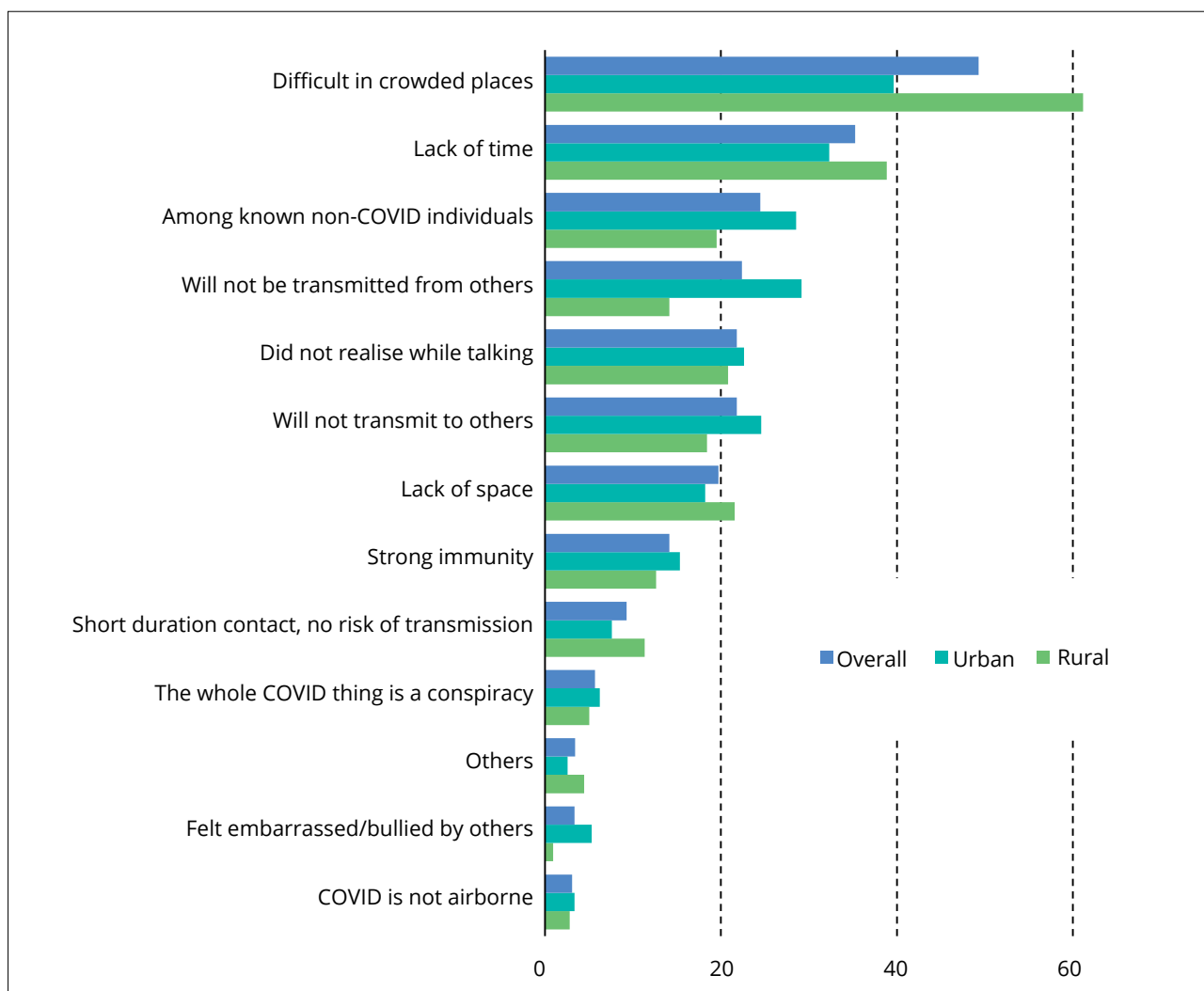


Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021



Location: Shampura Village, Roopnagar, Punjab

Figure 3.13: Share of Total Respondents by Reasons for Not Maintaining Physical Distance



Source: Social Experiments, July-August, 2021

Reasons for not maintaining social distance at public places

What are the problems you face in maintaining a 2 metre distance from others?

Crowded environment is the biggest barrier in urban areas, whereas misconception is a big challenge in rural areas.

According to the Social Experiment study, 'difficulty faced in crowded places' and 'lack of time' were the two most frequently cited reasons in both rural and urban areas.

In rural areas, misconception was a major challenge. A higher share of rural individuals felt that physical distancing is not required among known individuals and there is a smaller chance of getting infected or infecting others (Figure 3.13).

3.4.5 Self-reported and observed practice of CAB—'sanitisation of hands after touching unclean surfaces'

As per KAS, it is noted that 71% of the respondents reported that they frequently clean their hands throughout the day. Interestingly, only 41% mentioned that they have knowledge about the sanitization of hands after touching any unclean surface (Figure 3.14). This indicates that people wash their hands as a result of the daily habit of maintenance of self-hygiene, despite not being aware of the benefit of hand washing in controlling the spread of the COVID-19 infection.

Surprisingly, only 7% individuals observed sanitizing hands after touching surfaces in public places (Figure 3.15).

It is noted that the differences between self-reported practice and observed practice are higher

in rural compared to urban areas.

Also, the difference is noted to be higher among senior citizens (60 years and above), while awareness is higher among adults (19-45 years) (Figures 3.14 and 3.15)

Box 3.3: Observed Practice of Touching Unclean Surfaces and then Sanitizing Hands

It was noted that 61% individuals observed not touching any unclean surfaces whereas 32% were observed to be touching unclean surfaces but not sanitizing their hands after that. Only 7% individuals were observed to be touching unclean surfaces and sanitizing hands thereafter.

It was seen that the practice of sanitization of hands is higher in urban areas (9%) compared to rural areas (6%). It was higher among women (9%) compared to men (7%). The practice was also higher among youth (15-20 years) as they are more aware of the use of alcohol-based rubs (Figure 3.15).

Reasons for not using sanitiser after touching unclean surfaces at public places

When do we need to clean our hands and what are the problems in using sanitiser?

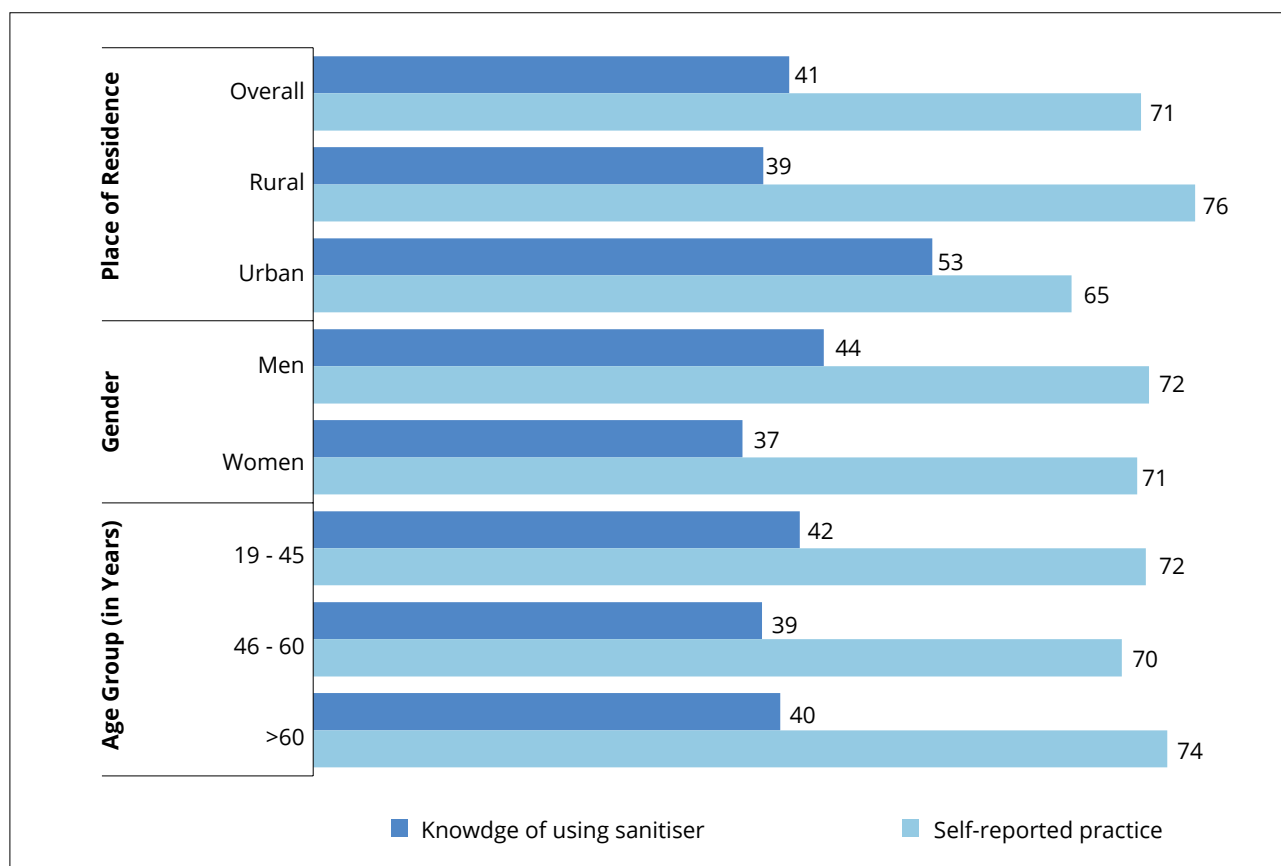
Despite having knowledge, people find difficulty in sanitizing hands due to lack of feasibility and unaffordability.

Half of the respondents who were touching unclean surfaces but not sanitizing hands said they nevertheless knew it was necessary to clean hands after touching unclean surfaces.

'Using soap after reaching home' is the most frequent reason for not sanitizing hands, particularly in urban areas.

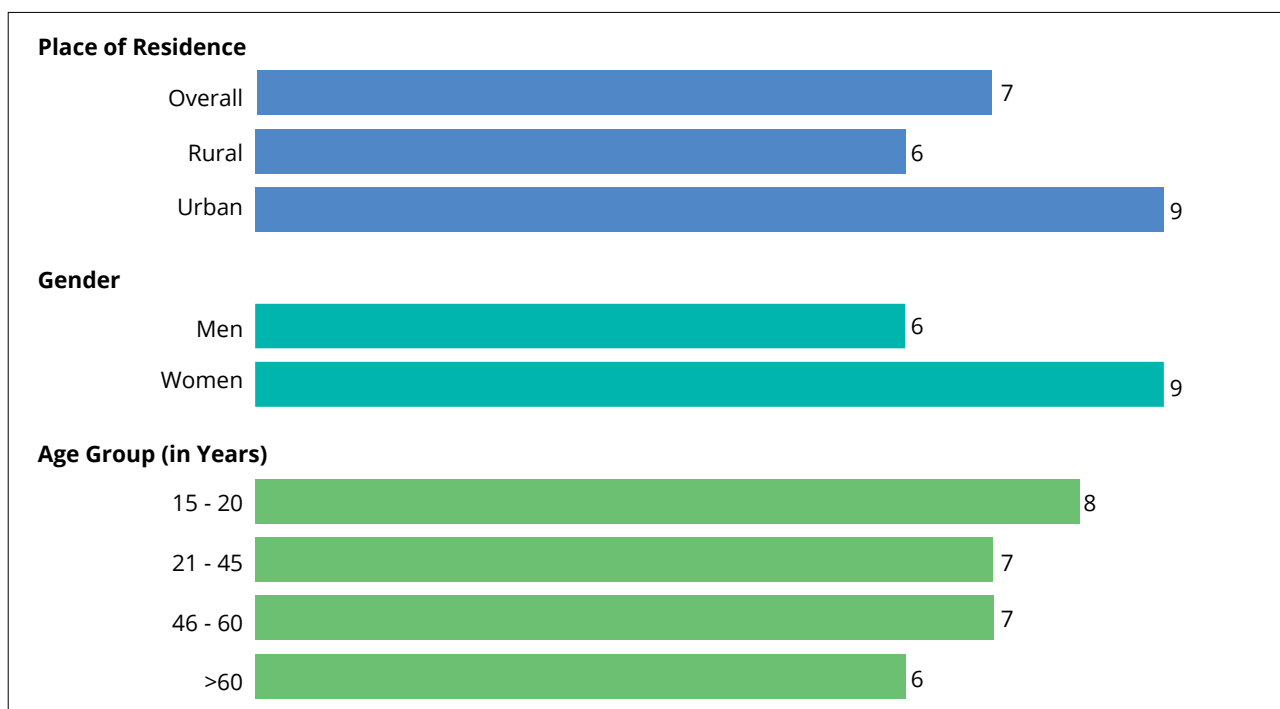
'Unaffordability of sanitiser' is the second most cited reason, noted to be higher among rural respondents (Figure 3.16).

Figure 3.14: Share of Respondents Who Have Knowledge about 'Sanitisation of Hands after Touching Any Surface at Public Place' and Who Self-reported the Practice



Note: All respondents are above 18 years of age. Therefore, the category 15-20 years (comparable to CABS) cannot be estimated; N= 2480
Source: Knowledge and Attitude Survey, July-August, 2021

Figure 3.15: Share of Observed Individuals Who Sanitise Their Hands after Touching Unclean Surfaces

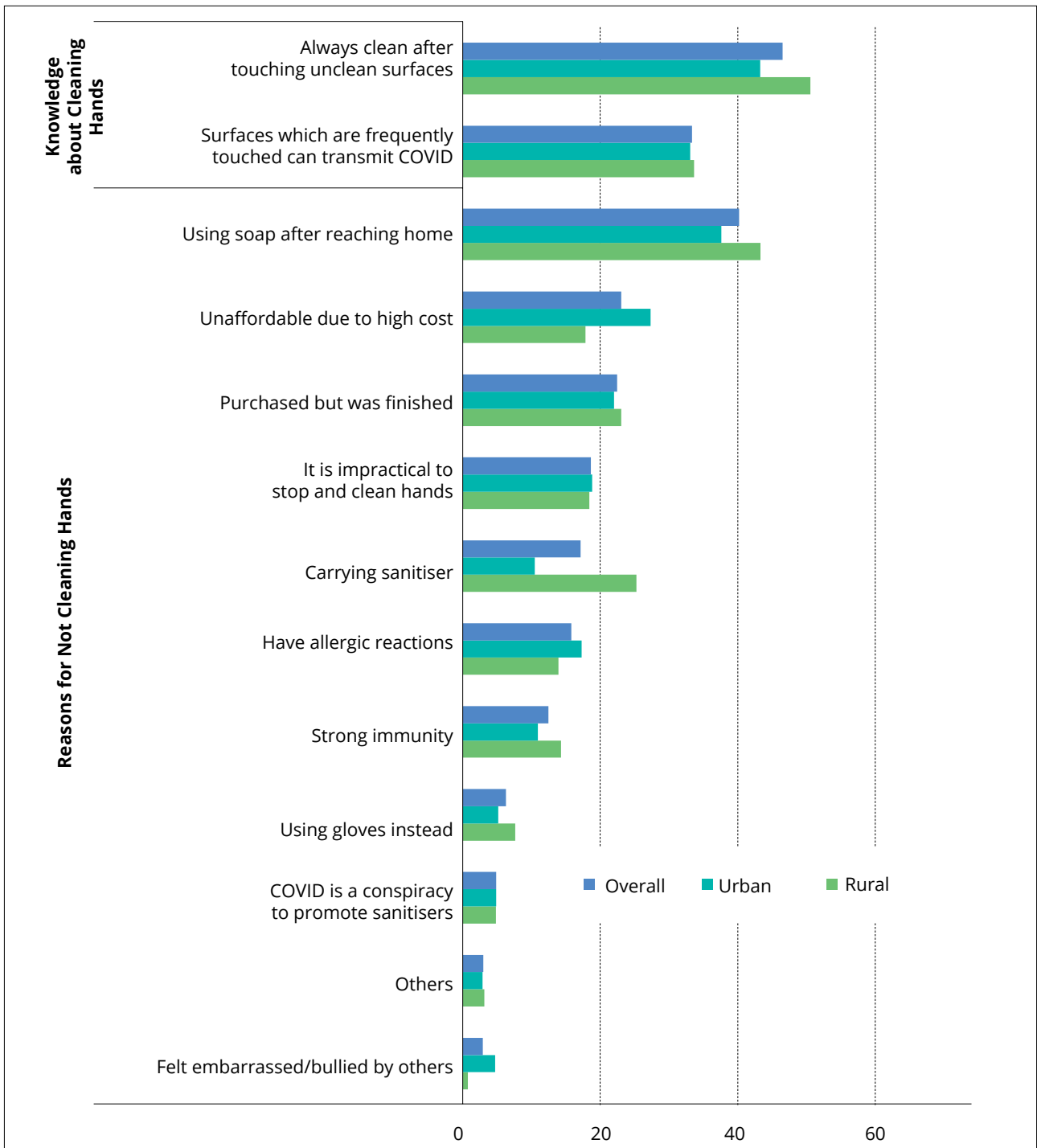


Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021



Location: Banedi Village, Indore, Madhya Pradesh

Figure 3.16: Share of Respondents by Who have Knowledge about Cleaning Hands/Reasons for Not Doing so



Note: N = 1197

Source: Social Experiments, July-August, 2021

3.4.6. Intensity of COVID-19 pandemic and observed practice of CAB

All the cities/districts were plotted against the prevalence rates and practice of different COVID-19 Appropriate Behaviour measures (wearing masks, maintenance of physical distance, and sanitization of hands after touching any unclean surface) in public places. Districts were then placed in four categories: low prevalence-high practice, high prevalence-high practice, low prevalence-low practice, high prevalence-low practice (refer to Box 3.4 for prevalence rates).

It was noted that most districts/cities with low prevalence also had poor practice of CAB (all three i.e. wearing masks, maintaining physical distancing, and sanitization of hands). Notably, the practice of CAB (all three measures) was more than satisfactory in Ranchi despite being a low prevalence district. Similarly, maintenance of physical distance and sanitization of hands was much high in Banswara and Dungarpur (both districts have low prevalence rates).

It was also noted that most of the cities/districts with high prevalence rates had a higher incidence

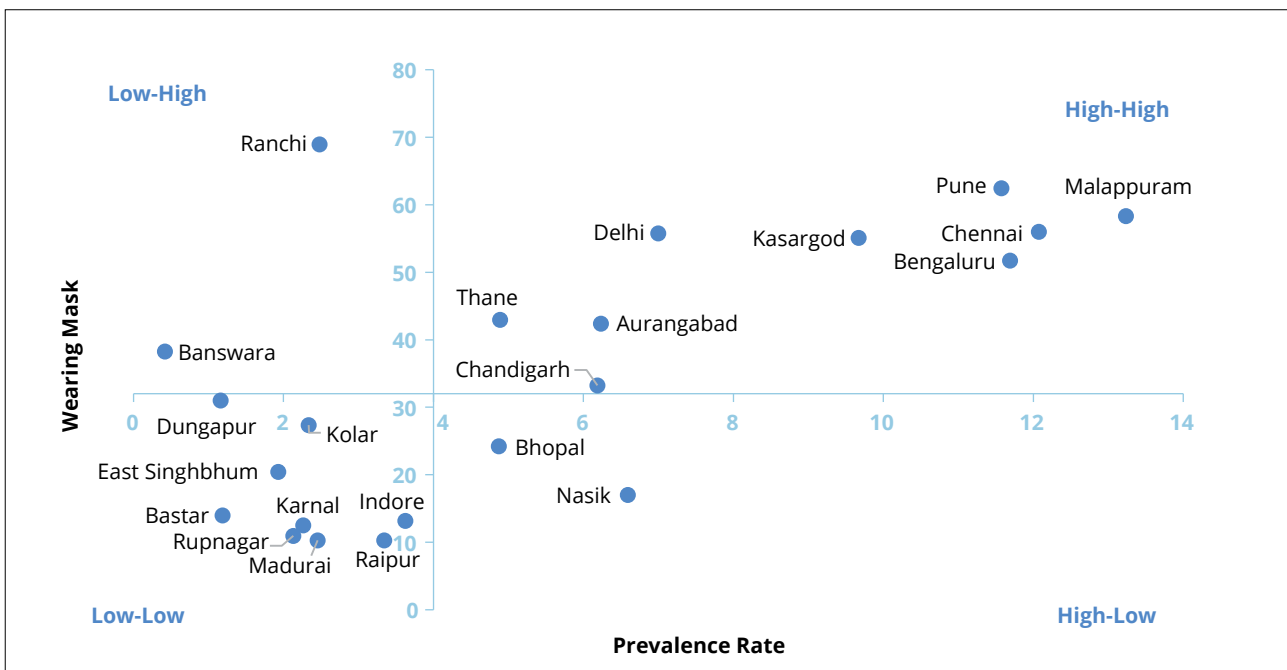
of wearing masks in public places, except for Bhopal and Nasik, which need urgent policy interventions (Figure 3.17).

Similarly, most of the cities and districts with a higher prevalence rate also had a higher share of people following physical distancing and hand sanitization, except cities like Delhi and Chandigarh, and Nasik (rural district) (Figures 3.18 and 3.19). These districts/cities need more policy interventions.

Box 3.4: Prevalence of COVID-19 in Cities/Districts

It was noted that the prevalence rate of COVID-19 confirmed cases was higher in all the cities surveyed except Raipur and Ranchi. Among the cities, the prevalence rate was higher in Chennai, Pune and Bengaluru. On the contrary, it was lower than median value in most of the surveyed rural districts except Malappuram, Nasik and Thane. Indeed, the prevalence rate was found to be highest in Malappuram district among all the cities and districts. Case prevalence was noted to be very low in Banswara and Dungarpur of Rajasthan.

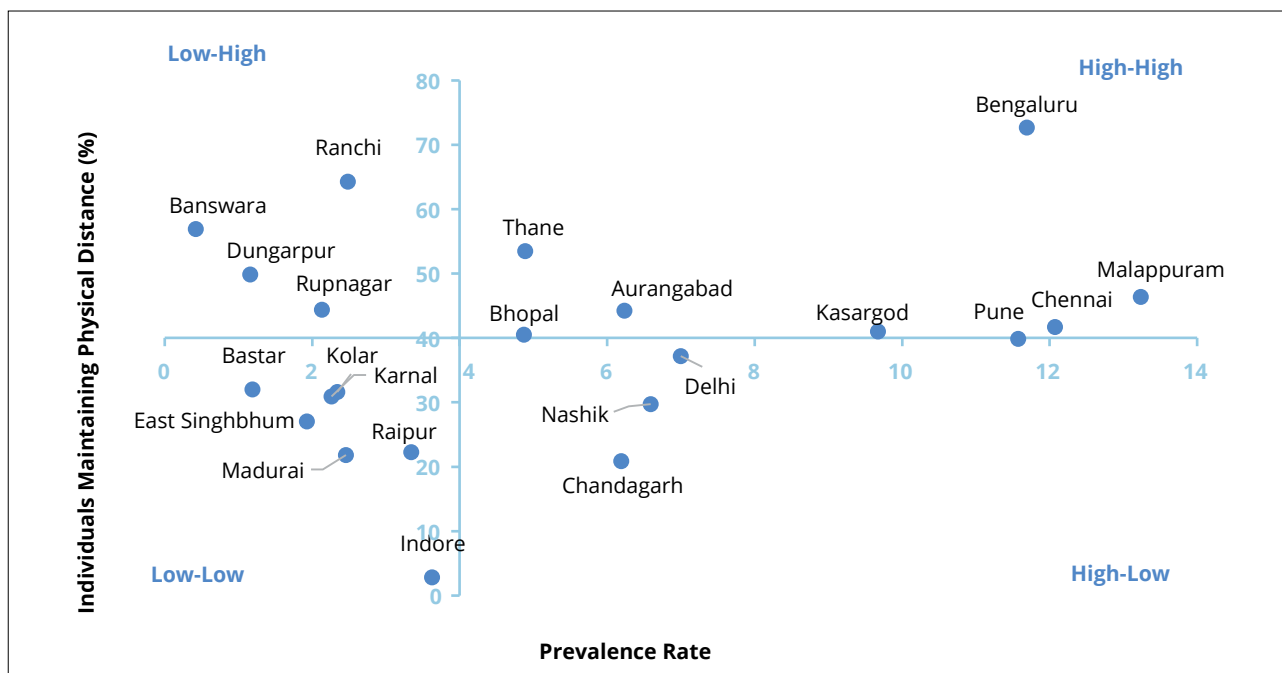
Figure 3.17. Practice of Wearing Mask



Note: See Appendix 3.14 for definitions

Source: The Ministry of Health and Family Welfare (MoHFW) and COVID Appropriate Behaviour Survey, 2021

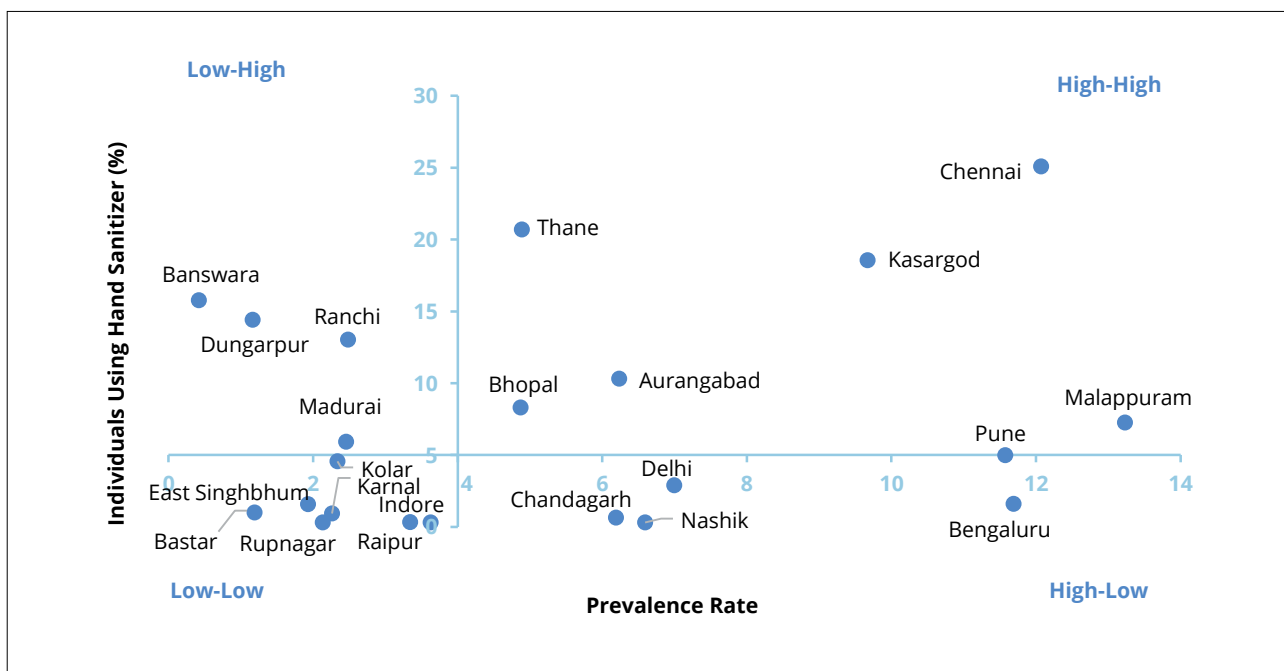
Figure 3.18. Maintaining Physical Distance



Note: See Appendix 3.14 for definitions

Source: The Ministry of Health and Family Welfare (MoHFW) and COVID Appropriate Behaviour Survey, 2021

Figure 3.19 Practice of Sanitization of Hands in Public Places



Note: See Appendix 3.14 for definitions

Source: The Ministry of Health and Family Welfare (MoHFW) and COVID Appropriate Behaviour Survey, 2021

3.5 Key takeaways

- It was seen that ‘wearing masks’, ‘maintaining physical distance’ and ‘washing of hands frequently with soap’ were the most frequently cited preventive measures across place of residence. Knowledge about less common preventive measures was poorer among women and less educated people. Overall knowledge about preventive measures was higher in urban areas.
- Among the various self-reported practices, wearing masks, maintenance of physical distancing, and cleaning of hands were the three most frequent measures practised by households. It was also noted that self-reporting of practising various measures was much higher in rural areas, and among men and adults (19-45 years).
- There was a stark difference between self-reported practice and observed practice of various measures (such as wearing masks, maintenance of physical distance, and sanitization of hands). The difference was noted to be very high in rural areas compared to urban areas.
- The practice of various preventive measures was noted to be lower in rural areas, among those aged 46-60 years and senior citizens (60 years and above). It was also noted that the practice of CAB was higher in districts/cities with higher prevalence of COVID-19 due to various restrictions imposed. These practices were notably lower in religious places, tea stalls, open

markets and community toilets, whereas they were satisfactory in malls and restaurants in cities. This indicates a class bias in the practice of CAB in public places.

- The practice of hand washing depends on the availability of exclusive access to water. Therefore, special attention is needed for slums.

3.6 Recommendations and policy implications

- The communication strategy needs to be strengthened in rural areas as self-reporting was very high here while the actual practice was much lower. For rural areas, an effective communication strategy is needed for enhancing knowledge and improving the practice of various measures.
- There is need for a sensitization drive to follow COVID-19 appropriate behaviour practices among those aged 46-60 years and senior citizens, and those who frequently visit religious places, tea stalls, and open markets. As the practice of CAB is found to have a class bias, economically weaker sections in urban areas need to be sensitized accordingly.
- Special attention should be given to Jharkhand and Chhattisgarh in terms of awareness generation regarding COVID-19 Appropriate Behaviour (CAB).



Location: Simrol Village, Indore District, Madhya Pradesh

Knowledge and Attitude towards Vaccination



Wash Hand



Use Soap



Avoid Crowd



Use Mask



Avoid Shakehand



Use Disinfection

4.1. The economic cost of delayed vaccinations

The COVID-19 pandemic has advanced vaccine development at an extraordinary pace. However, the public responses to vaccines have been found to vary greatly among countries. Current estimates show that there are considerable geographical variations in the uptake of vaccines. For instance, whereas 51% of the total population has been vaccinated in Europe and 46% in North America, Africa lags behind at 4%.¹¹ India too stands at the lower end of the spectrum with only 16% of the population fully vaccinated as of the third quarter of 2021.¹² The cost of delay in vaccinations has been estimated up to \$2.3 million globally by the recent *The Economist Intelligence Unit report*.¹³ The largest share of money lost is expected to come from the GDP of Asian countries, and within Asia, emerging powerhouses like India are expected to bear the maximum brunt of slow vaccination timelines. Given the sheer size of population in India and the experience of the COVID-19 spread, there is an urgent need to understand and assess the knowledge, attitude and uptake of the COVID-19 vaccine among the general population.

The cost of delay in vaccinations has been estimated up to \$2.3 million globally. A considerable share of money lost is expected to come from India, an emerging powerhouse in Asia.

—*The Economist Intelligence Unit Report*

4.2. Differentials in knowledge of vaccines (availability, usefulness, dosage, free vaccines and post vaccination behaviours)

4.2.1. Differentials in knowledge about availability of vaccines

Is there any vaccine available for COVID-19 in India currently?

The Knowledge and Attitude Survey conducted across various rural and urban locations in India reveals that urban areas (94%) fared better than rural areas (76%) in terms of level of knowledge about availability of vaccines. Moreover, knowledge level was noted to be much higher among respondents from HIG residential areas (97%), than among respondents from MIG areas (91%). Interestingly, knowledge about availability of vaccines was satisfactory among slum-dwellers owing to the extensive awareness drives in those localities.

The level of knowledge about availability of vaccines was higher in older age groups as well as among individuals with a higher level of completed education (93%) (Figure 4.1).



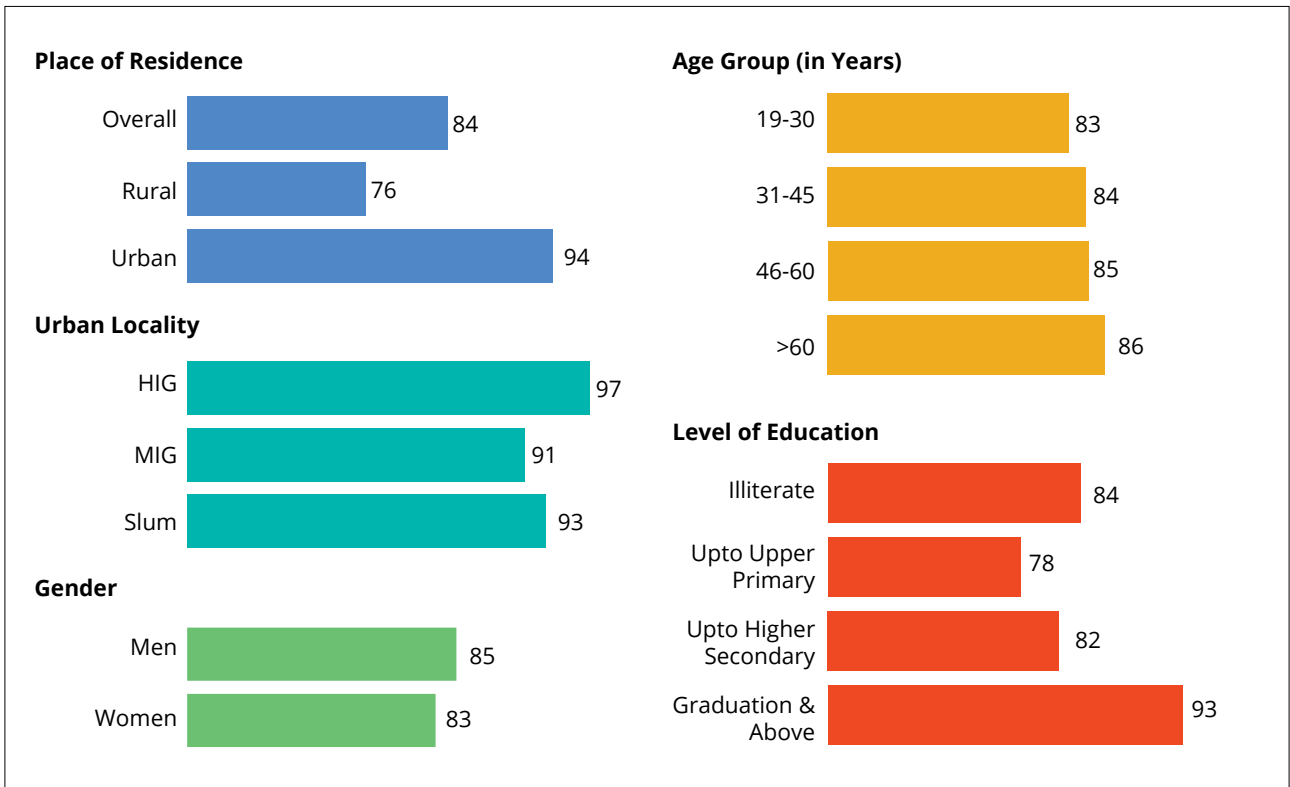
Location: Anand Vihar Railway Station, Delhi

11 <https://www.statista.com/chart/25832/share-fully-vaccinated-covid-by-world-region/>

12 <https://www.statista.com/statistics/1202074/share-of-population-vaccinated-covid-19-by-county-worldwide/>

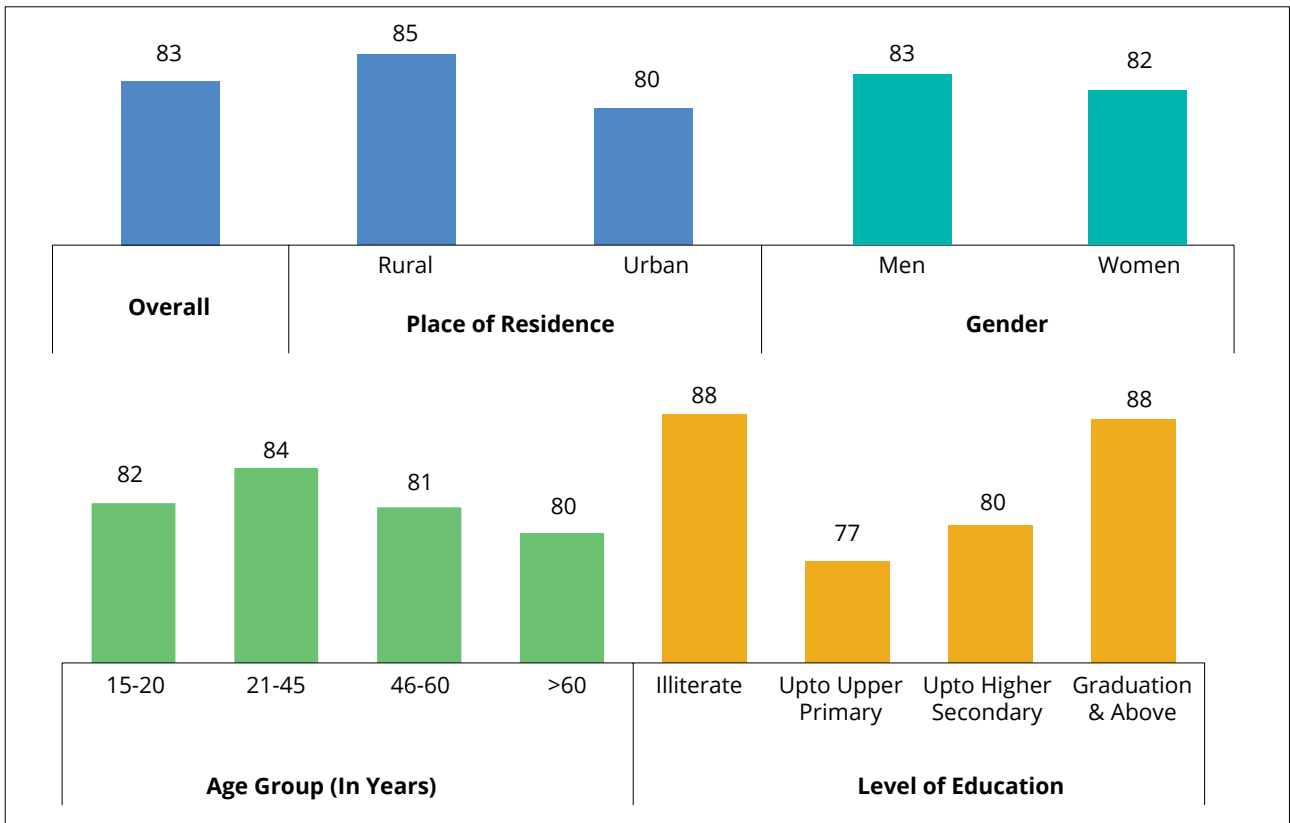
13 The Economist Intelligence Unit (2021). "How much will vaccine inequity cost?" *The Economist*

Figure 4.1: Percentage of Respondents with Knowledge About Availability of Vaccine



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 4.2: Percentage of Respondents Who had Knowledge About Usefulness of Vaccines



Note: The distribution is only out of those who had knowledge about availability of vaccine

Source: Knowledge and Attitude Survey, July-August, 2021

4.2.2 Differentials in knowledge about usefulness of vaccines

Is the vaccine useful?

The Knowledge and Attitude Survey inquired about the respondents' opinion on the usefulness of the available vaccines in India. Out of the total respondents 83% of them, with knowledge of vaccine availability also thought that it was effective. The knowledge regarding effectiveness of the vaccines was almost consistent among men and women (Figure 4.2).

Despite the higher level of overall knowledge about availability of vaccines in urban areas, only 80% respondents felt that they were effective as compared to 85% of the rural respondents.

"People of the area were not willing to take the COVID vaccine, because there was a widespread rumour about an incident that those who take the vaccine are dying. There was one doctor (MBBS) who died after vaccination. One boy from the village died of a road accident but doctors in the hospital declared him dead saying that he was Corona positive. Government officers (BDO and other officials) warned the villagers that if they do not take the vaccine their names will be struck off from the voter list and not issued ration cards and they will not be given any government facilities. Even after such warning villagers were not willing to take the vaccine. For villagers, especially tribal, life was more important than a ration card or voter card."

Source: East Singbhum District, Jharkhand Knowledge and Attitude Survey

Also, those who have completed education up to primary and higher secondary level seem to have greater hesitancy regarding effectiveness of the vaccines. This might be due to the 'infodemic' of information among semi-literates that creates certain misconceptions.

A high level of knowledge regarding the effectiveness of vaccines among those who have received a higher education may be due to their greater access to scientific knowledge. On the other hand, a high level of knowledge among the less educated population might be due to the targeted government knowledge campaigns and awareness programmes.

4.2.3. Differentials in knowledge about number of doses

How many doses of the vaccine are recommended for effective prevention of Covid-19?

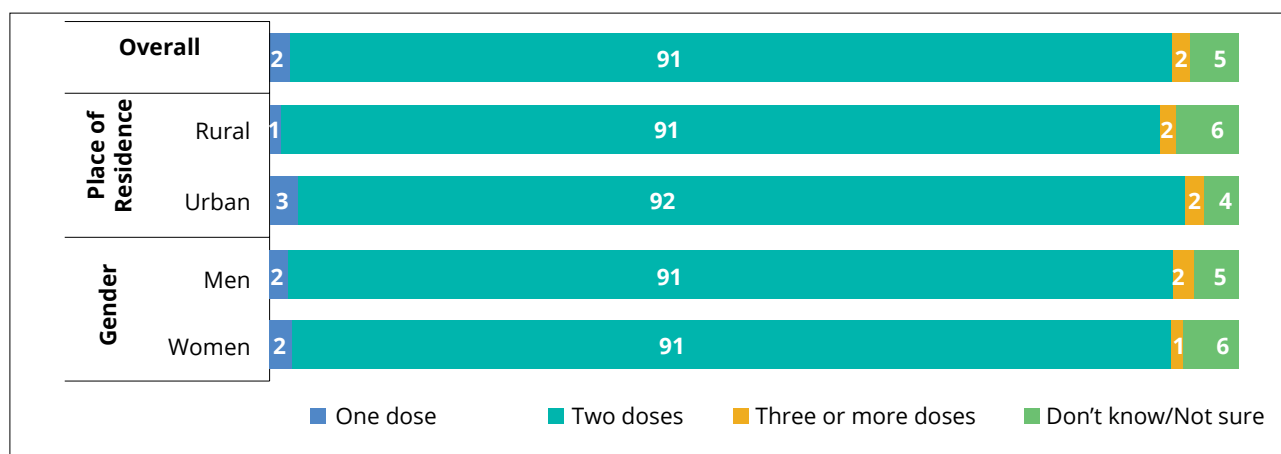
At the aggregate level, 91% of the respondents had correct knowledge about the recommended dosage, i.e. two doses. It is noted that the knowledge regarding the recommended dosage of vaccine was consistent across the place of residence and gender (Figure 4.3).

4.2.4 Differentials in knowledge about free vaccines

Was the vaccine that was currently available free of charge?

According to the Knowledge and Attitude Survey, 91% of the respondents with knowledge about the availability of Covid-19 vaccine also knew that they are available free of cost.

Figure 4.3: Percentage of Respondents Who Had Knowledge About Recommended Number of Doses of Vaccine

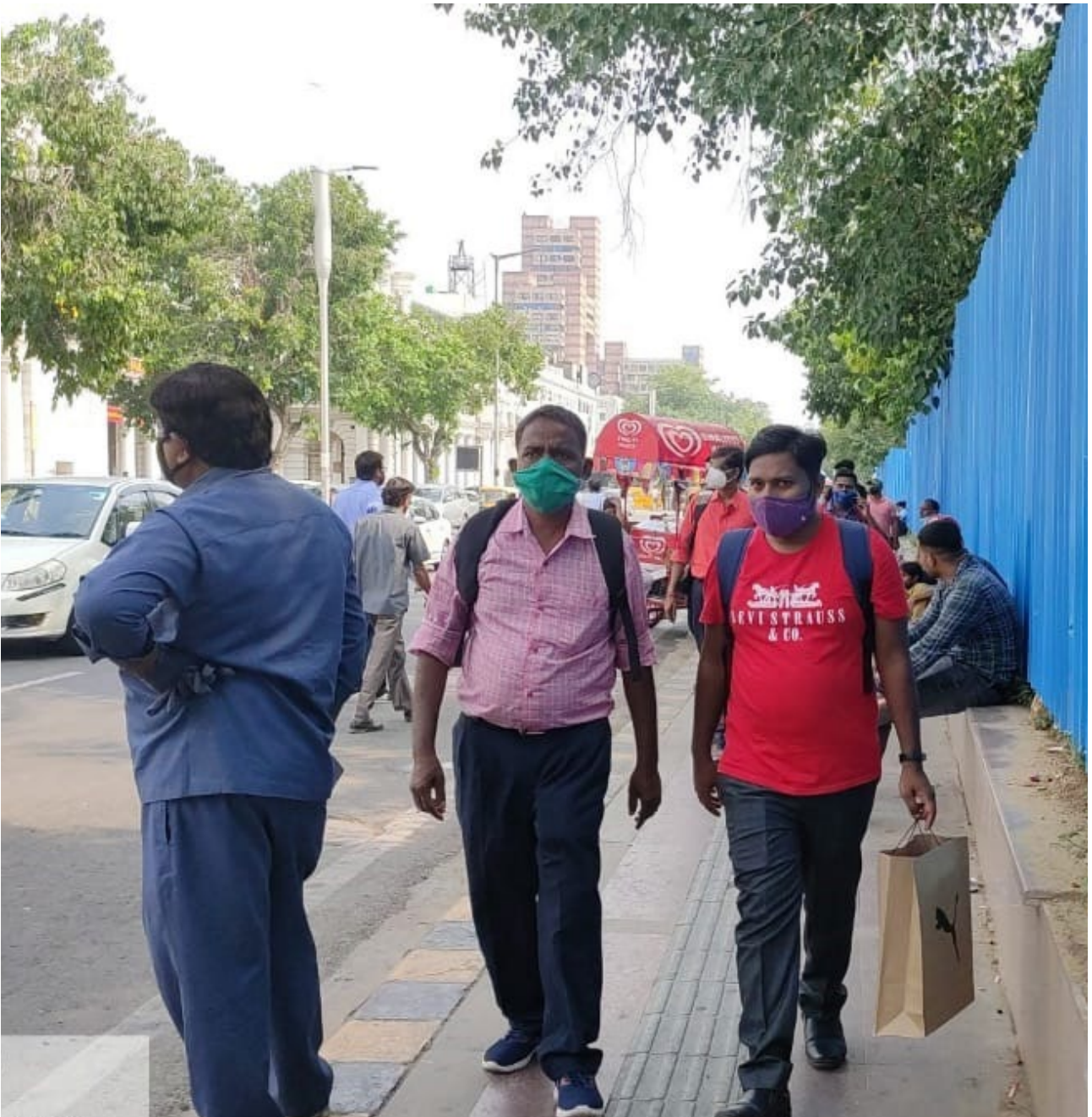


Note: The distribution is only out of those who had knowledge about availability of vaccine

Source: Knowledge and Attitude Survey, July-August, 2021

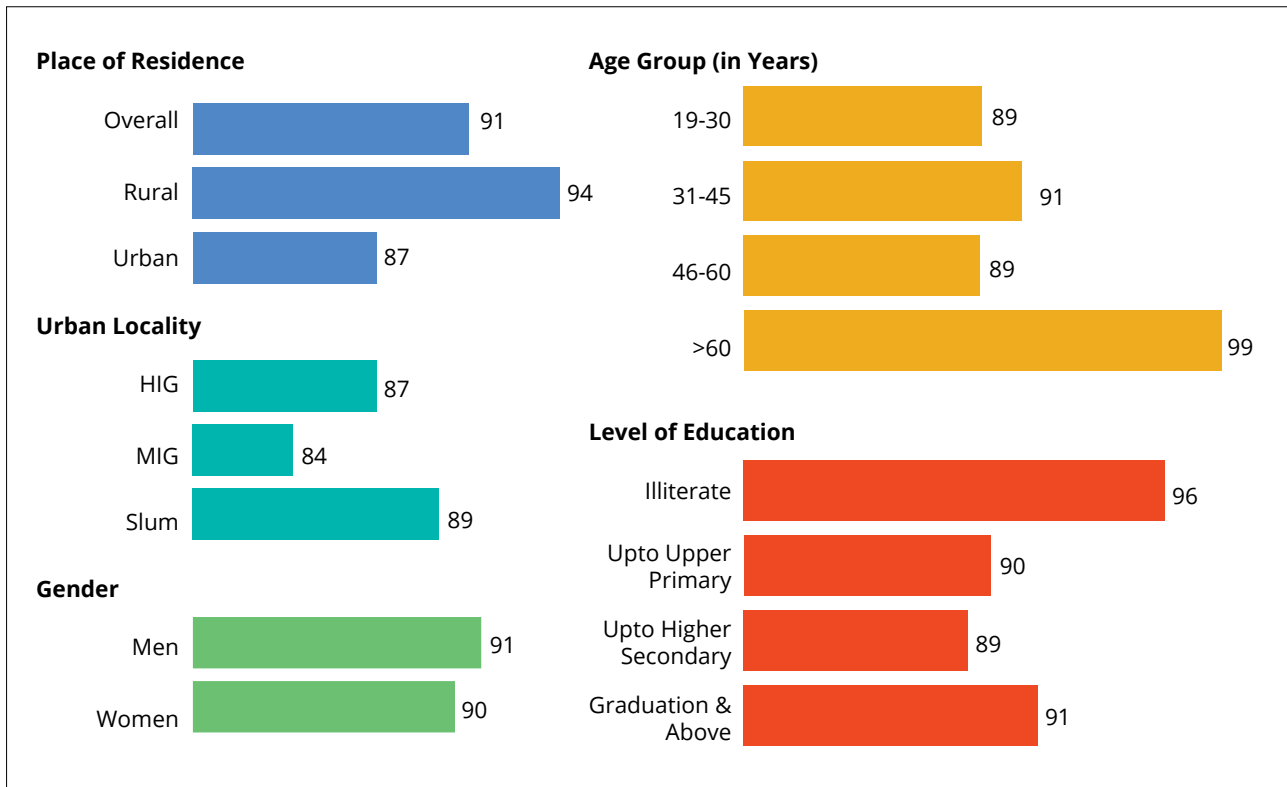


Location: Banjari, Indore, Madya Pradesh



Location: Connaught Place, Delhi

Figure 4.4: Percentage of Respondents Who Had Knowledge About Availability of Free Vaccines



Note: The distribution is only out of those who had knowledge about availability of vaccine

Source: Knowledge and Attitude Survey, July-August, 2021

Disaggregated figures by location and type of localities revealed that there was a greater share of individuals who were aware of the availability of free vaccines in rural compared to urban areas. Within urban areas, respondents from slums (89%) had a higher level of this knowledge (Figure 4.4).

The higher level of awareness among rural and slum areas regarding free vaccination may also be attributed to the lack of private service providers and private health facilities in these areas. *Since the activity of administering vaccines was mainly handled by public facilities in such areas which provide these services without any cost, a greater share of individuals residing in these areas were thus aware of the availability of free vaccines.*

A further age group-wise disaggregation indicates that almost every senior citizen had knowledge about availability of COVID-19 vaccines that were free of cost, whereas the awareness was much lower among other age groups. The higher level of awareness among senior citizens is due to the fact that they have been prioritised in the inoculation drives from the beginning. Although the vaccines are made available for all citizens above 18 years of age, awareness about free vaccines is much lower among younger age groups, which may be the reason why the vaccination process is slow.

Moreover, it is seen that awareness about free vaccines was much higher among respondents with no education compared to others, including respondents with higher education (graduation and above) (Figure 4.4).

Although a significantly larger share of individuals in urban areas were aware of COVID-19 vaccines, the multitude of options including paid vaccinations in the urban areas led to a lower awareness about the availability of free vaccines.

4.2.5. Differentials in willingness to follow COVID appropriate behaviour (CAB) after vaccination

After vaccination will you follow COVID-19 appropriate preventive measures (wearing a mask in public places, keeping hand hygiene, practising social distancing, maintaining respiratory etiquette)?

While COVID-19 vaccines are vital in preventing deaths and adverse symptoms, the extent of their effectiveness is still being debated. Global health agencies recommend continuing taking precautions even after individuals have been vaccinated. However, lack of information and misinformation

regarding post vaccination behaviours might lead to people not complying with CAB post vaccination.

Results from the Knowledge and Attitude Survey (KAS) indicated that overall 71% of the respondents were willing to follow CAB even after being vaccinated.

The willingness to follow CAB post-vaccination was noted to be much higher in urban areas (81%) in comparison with rural areas (74%), indicating a higher awareness level among urban respondents. Within urban areas, the willingness to follow CAB post vaccination was highest in the HIG localities (87%) and poorest in MIG localities (75%). This indicates a need for communication drives targeting MIG localities as they have been hard hit by the outbreak during the second wave. Also, men (78%) were more prone to follow CAB post vaccination than women (76%) (Figure 4.5).

Willingness to follow CAB post vaccination was noted to be higher among individuals aged 60 years and above (86%), indicating the success of targeted communication drives among the most vulnerable age group. However, the lack of willingness to follow CAB post-vaccination among other age

groups, particularly those aged 46-60 years should be a concern. Moreover, it is noted that willingness to follow CAB post vaccination was higher among the highly educated and illiterates (84%), whereas it was noted to be much lower among semi-literates, which may be due to the impact of misinformation (Figure 4.5).

Awareness campaigns need to be regulated frequently among sections of the population, including women, mature adults (46-60 years), semi-literates, people living in rural areas and MIG localities of urban areas, where willingness to adhere to CAB post vaccination is low.

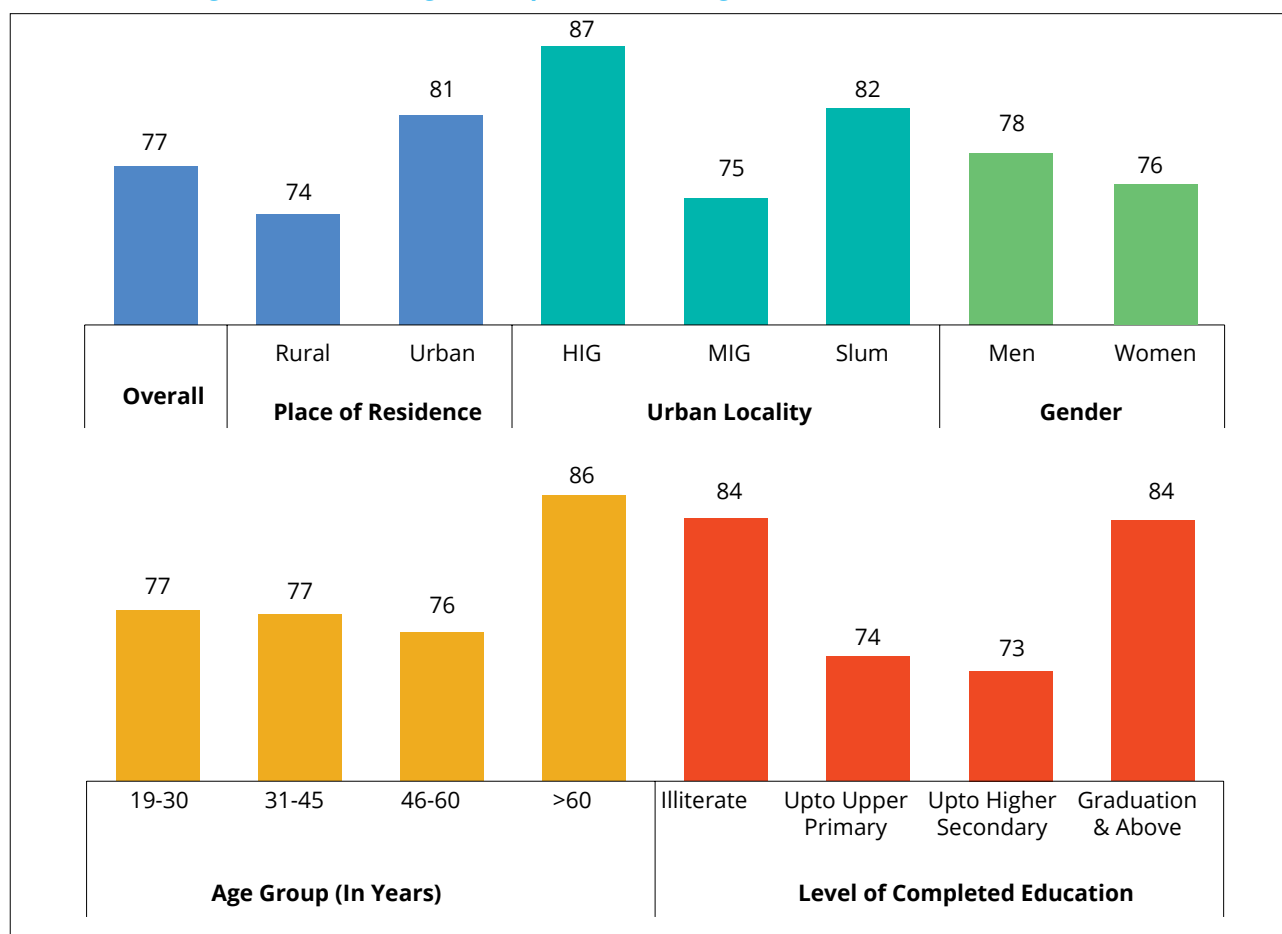
4.3. Identifying those who are vaccinated, barriers and way ahead

4.3.1 Differentials in access to vaccines

Have you taken the Covid-19 vaccine?

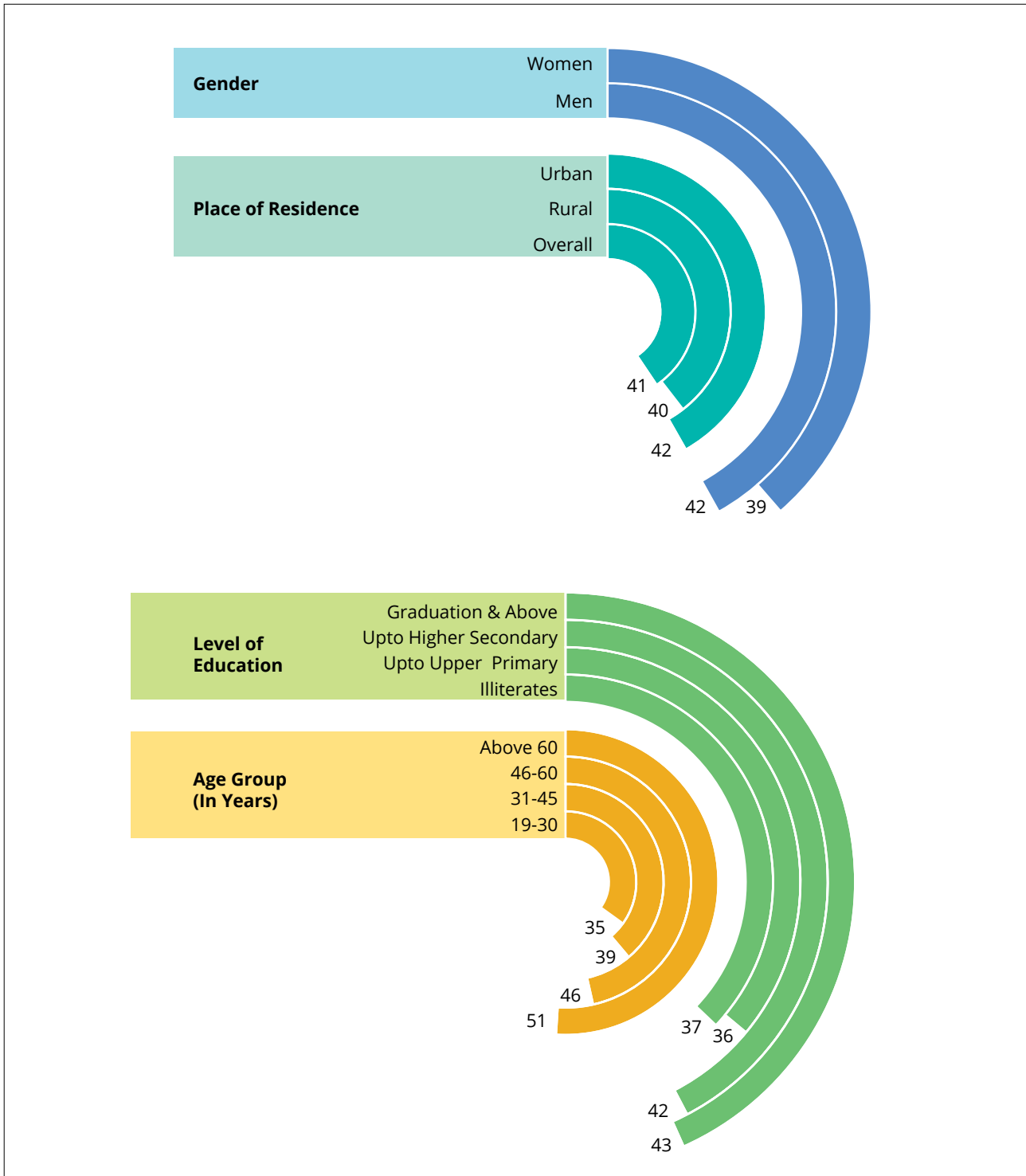
According to the Knowledge and Attitude Survey, around 41% of the respondents who were eligible

Figure 4.5: Percentage of Respondents Willing to Follow CAB After Vaccination



Source: Knowledge and Attitude Survey, July-August, 2021

Figure 4.6: Percentage of Respondents Who Have Taken Vaccine (Self-reported)



Source: Knowledge and Attitude Survey, July-August, 2021

for vaccine were found to be vaccinated (Figure 4.6). The share of those who were vaccinated among eligible individuals was observed to be higher among men than women. Moreover, the share of eligible women respondents who were vaccinated was much lower in rural areas. The low uptake of vaccination can be explained when the higher

level of vaccine hesitancy, especially regarding the perception of efficacy of the vaccines and its side effects among women is taken into consideration. Access to vaccination was also observed to increase as the age and level of education of the respondent increases. The linear relation of vaccine uptake with age was both due to the greater perceived



Location: Kasaragod Railway Station, Kerala

risk among older age groups in the first wave and the targeted vaccination programme introduced in India where older age groups were given the first priority.

Box 4.1: Gender Gap in Vaccinations

“Currently, there is also a concern that less women are getting vaccinated than men in India—17% more men than women have been partially or fully vaccinated, and according to national data, there are only two states where more women are taking the vaccine.”

—UN Women, July 2021

4.3.2 Barriers in access to vaccines

Did you face any difficulty in getting vaccinated?

Overall, 45% of the respondents who have taken the vaccine faced difficulty in doing the same. A very high share of both men (48%) and women (42%) faced difficulties (Appendix 4.1). Issues such as difficulty in registration and long waiting time at the vaccination centres were more prevalent than other issues. The challenge of getting a preferred slot was more pronounced in the rural areas. As

digital knowledge is lower in rural areas, people there face more challenges regarding preferred slots. On the other hand, urban areas faced issues such as vaccine unavailability and difficulty in registration.

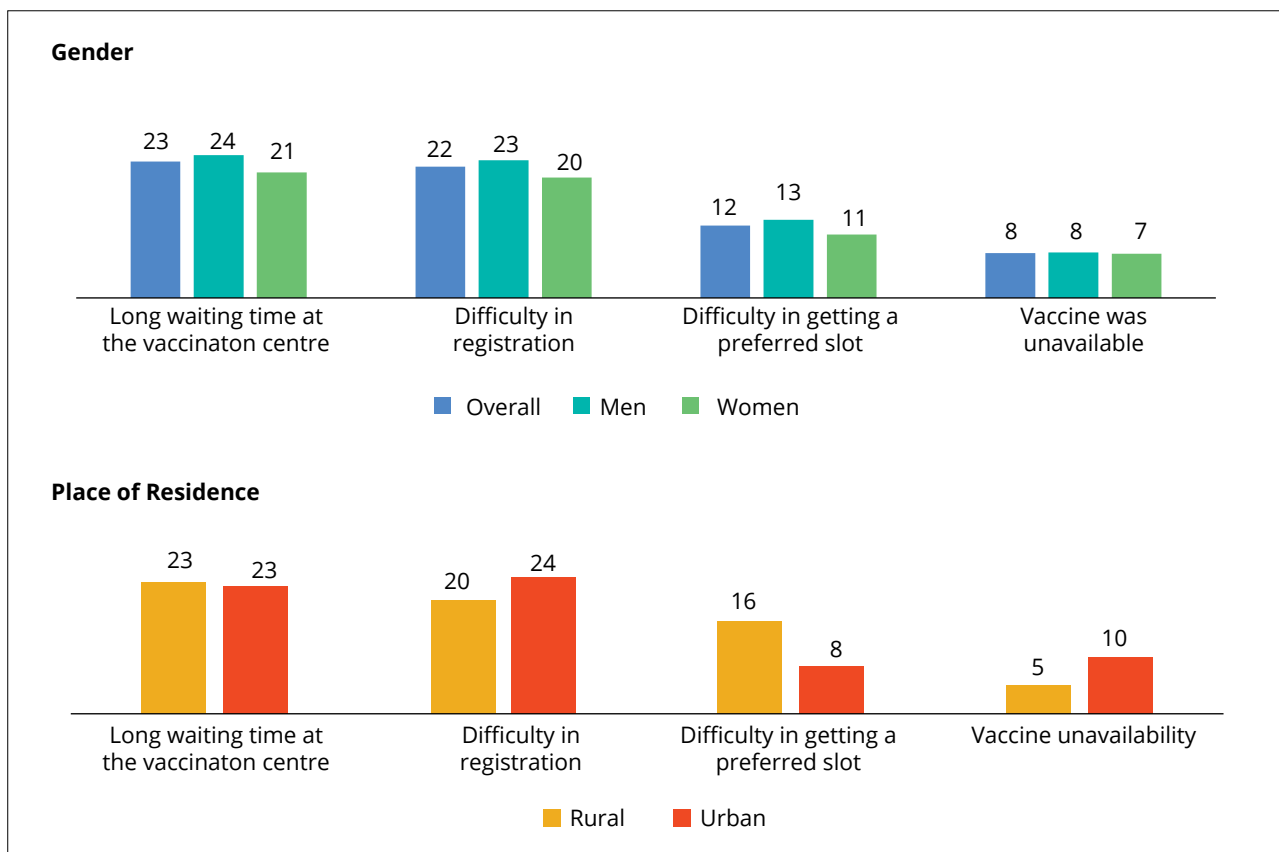
Approximately half of the eligible respondents who opted to get vaccinated faced issues such as difficulty in registration and long waiting time. The already overburdened health facilities in rural areas were more prone to encounter such issues.

4.3.3 Profile of respondents who faced difficulty in registration

More than half of the respondents faced difficulty in registration. This issue was much more pronounced in the urban areas (61%) than rural areas (43%). *Within urban areas also, the urban poor, i.e. those residing in slums (69%) faced more issues regarding registration than those who reside in HIGs (62%) and MIGs (56%).* There was no considerable gap between the genders.

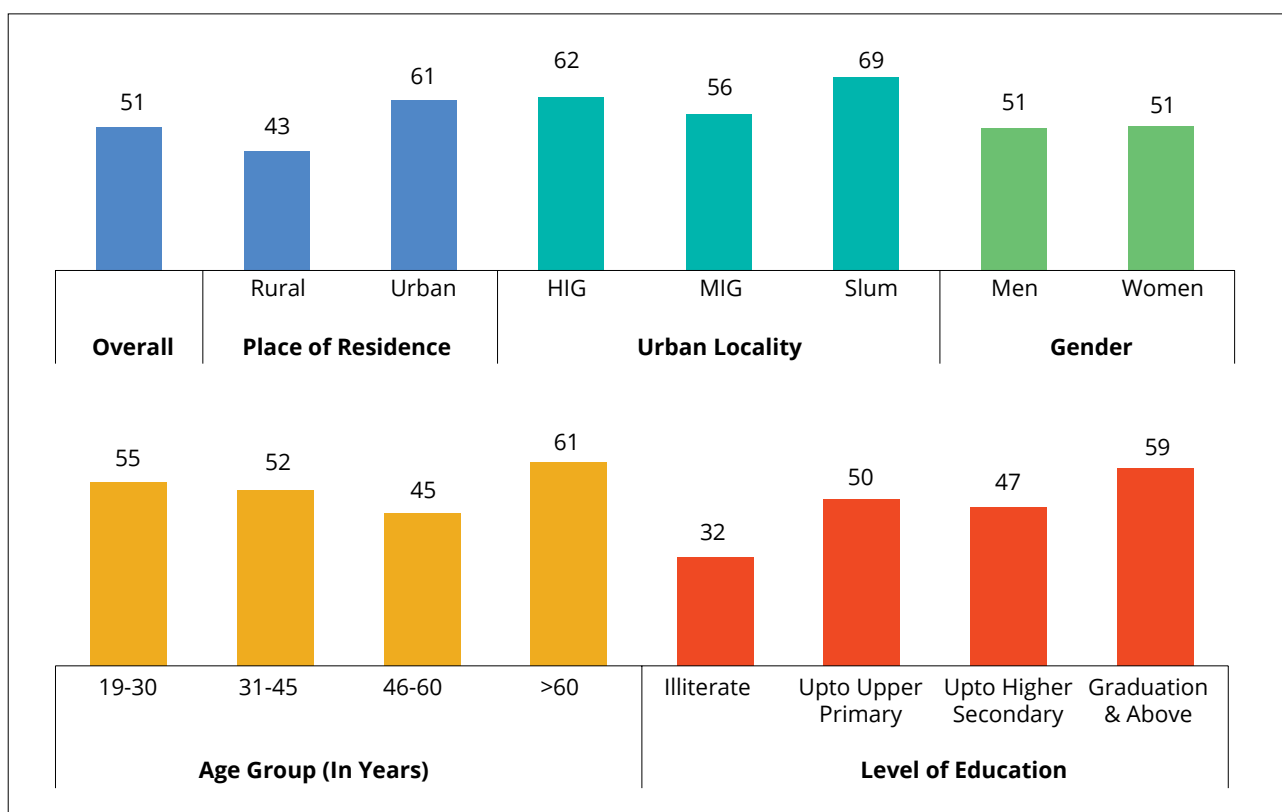
Among the age groups, a higher share of those aged above 60 years (61%) faced difficulty in registration. This indicates that since digital literacy is low among this age group, they tend to face more challenges in registration, which might delay their access to

Figure 4.7: Percentage of Respondents Who Faced Problem During Vaccination by Nature of Problem



Note: N= 1488, Source: Knowledge and Attitude Survey, July-August, 2021

Figure 4.8: Percentage of Respondents Who Faced Difficulty in Registration



Source: Knowledge and Attitude Survey, July-August, 2021



Location: Ranchi Railway Station, Jharkhand

vaccination despite being a high-risk age group. However, a higher share of respondents who had education till graduation (59%) also reported facing issues in registration (Figure 4.8).

4.3.4 Reasons influencing choice of getting vaccinated

What was/will be the factors influencing your decision whether or not to get vaccinated?

The Knowledge and Attitude Survey also collected information regarding the factors that influenced an individual's decision to get vaccinated. The influential factors can then be utilised in programmes to increase the uptake of vaccination.

It was noted that recommendations from trusted sources such as government, doctors and ASHA workers emerged as the most cited reasons for getting vaccinated. Apart from that, factors such as cost of vaccine, risk perception of COVID-19 infection, and trust in the manufacturing country were also highly cited factors affecting the choice of getting vaccinated (Figure 4.9).

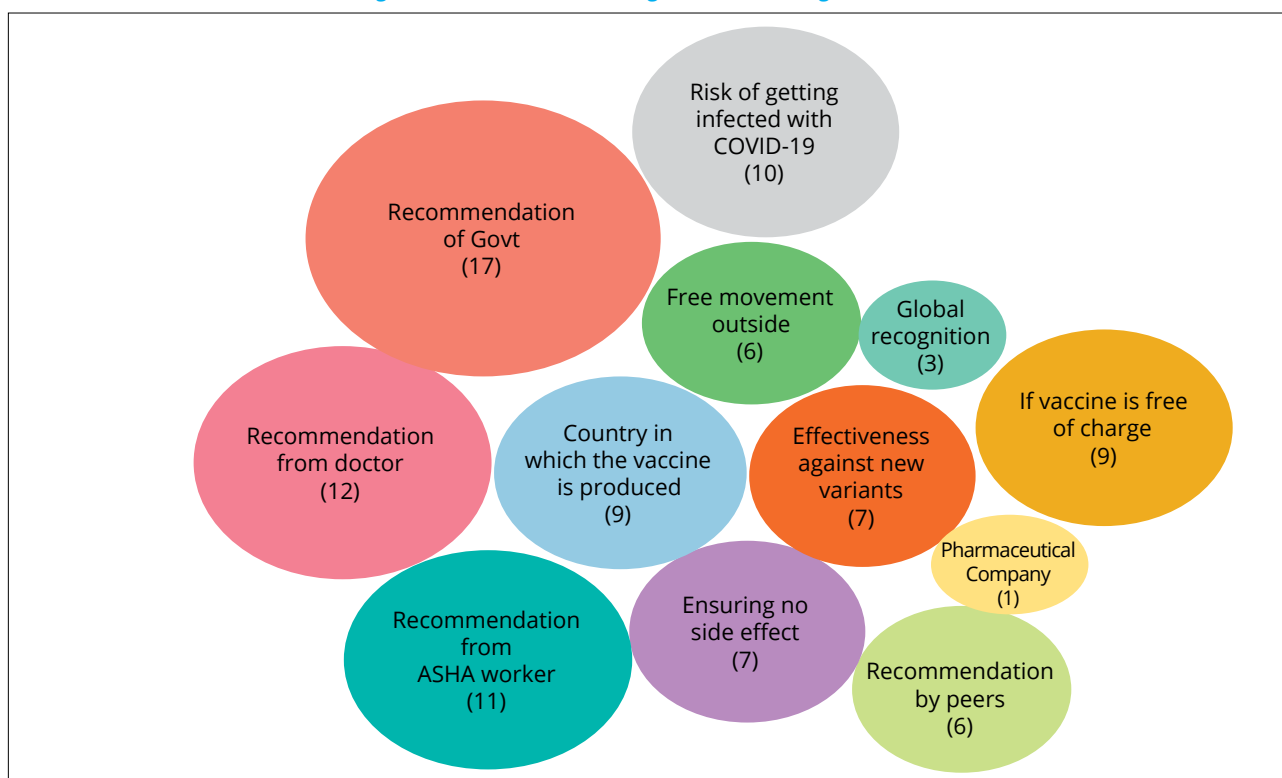
The study found that whereas in rural areas, the recommendation of community health workers like ASHA had a major influence on the choice of getting vaccinated or not, in urban areas government recommendation was the most cited reason. The

effectiveness of vaccines was also a major factor affecting the choice of getting vaccinated in urban areas (Appendix 4.2). *Recommendation from the government emerged as the top reason for getting vaccinated among both men and women.* However, where women were more influenced by factors such as whether the vaccine had a side effect, men were more influenced by effectiveness of vaccines against new variants of the COVID-19 virus (Appendix 4.3).

4.4. Key takeaways

- Knowledge regarding availability of COVID-19 vaccines was high in urban areas as compared to the rural areas. It was also higher among those who were highly educated and people aged 60 and above.
- Residents in urban areas and those aged 31-45 years were more likely to consider vaccines as effective. Women were more prone to have doubts regarding the effectiveness of the vaccine, which was reflected in the lower uptake of vaccines by women.
- Since administering vaccines was mainly handled by public facilities in rural areas free of cost, a greater share of individuals residing in these areas were thus aware of the availability of free vaccines.

Figure 4.9: Reasons Influencing Choice of Getting Vaccinated



Note: Colour shows detail about Reasons. 'Any Other' is excluded. Figures in brackets represent the percent share to total responses.

Source: Knowledge and Attitude Survey, July-August, 2021



Location: Kirti Nagar, Delhi



Location: Local Village Market, Khandamouda Village, East Singhum District, Jharkhand

- Overall, three-fourths of the respondents were willing to follow CAB even after being vaccinated. This suggests that the knowledge and willingness regarding post vaccination CAB behaviours is high among the general population, though some sub-groups still need special attention, such as MIGs and slums.
- There was a gender disparity in uptake of vaccination, especially in the rural areas. This might also be associated with the fact that women and those in rural areas have a low level of digital knowledge and hence face greater difficulty in getting vaccinated.
- Recommendation from government, health workers and doctors are the top most cited factors influencing an individual's choice of being vaccinated.

4.5. Recommendations and policy implications

- Awareness drives regarding effectiveness of the vaccines need to be upscaled among illiterates and younger age groups.
- Vaccination drives need to expand their access in rural areas and especially among women as structural as well as socio-economic factors might prevent women from accessing COVID-19 vaccines.
- Government sponsored campaigns as well as recommendations from trusted health workers within the community can play a major role in increasing the uptake of vaccination.



Location: Bittan Market Square, Bhopal, Madhya Pradesh

Policy Implications and Way Forward



Wash Hand



Use Soap



Avoid Crowd



Use Mask



Avoid Shakehand



Use Disinfection

5.1 Key findings

The COVID-19 Appropriate Behavioural Surveillance study attempted to assess people's knowledge, attitude and behaviours about the disease, preventive measures and vaccinations using a combination of information obtained from household surveys, observation surveys and social experiments across select locations in 10 cities and 12 districts of 11 major states.

The study revealed that knowledge about COVID-19, its symptoms, risk perception, testing facilities and available treatment when tested positive varies across rural and urban locations and by gender, age, residential locations within cities, and also education level. Knowledge about less common symptoms, testing and treatment facilities was low among women, senior citizens, less educated people and those living in rural areas and slums. Misinformation related to risk perception about available treatments was noted to be higher among women, less educated people and those living in slums and rural areas.

Most people were aware of popular preventive measures like wearing masks and maintenance of physical distance of 2 metres in public places and practice of self-hygiene. It was also noted that self-reporting regarding practice of these measures was

very high, particularly in rural areas and among men. However, as per the Observation Survey, the share of individuals who followed the above-mentioned COVID-19 appropriate behaviours in reality was much lower than what was found in terms of self-reporting.

The study also showed that the practice of CAB was particularly poor in rural areas, among men, adults (46-60 years) and senior citizens (60 years and above). It was also notably less in public places such as open markets, religious places, streets, and tea stalls. On the other hand, it was more strictly followed in places like malls and restaurants, clearly indicating a class bias.

Discomfort was the main reason cited behind not wearing masks in public places. On the other hand, lack of space and time and misinformation were cited as the main reasons why people failed to maintain physical distance in public places. Furthermore, lack of affordability and feasibility were cited as the main barriers in sanitization of hands using alcohol-based rubs in public places. Moreover, factors like availability of exclusive access to water, educational level and residential location all had an impact on the practice of hand washing for people at home.



Location: Thalangara Village, Kasaragod District, Kerala

Vaccination, considered the most important intervention in developing herd immunity, was also perceived differently across rural and urban locations and by gender, age, residential locations within cities and education level. It was noted that misconception about vaccination was higher in urban areas, among women, senior citizens and those who were less educated. This vaccine hesitancy had an adverse impact on the decision to getting vaccinated. For instance, results indicated that a greater share of women had doubts regarding the effectiveness of the vaccine and this in turn was also reflected in their lower uptake of vaccination, especially in rural areas. However, people's positive decision to getting vaccinated was influenced by the recommendations of doctors and ASHA workers.

Misinformation had an impact on people's decisions to follow CAB after getting vaccinated. It was seen that those in rural areas, those living in MIG localities and slums, young people, and people with less education were less willing to follow CAB after getting vaccinated, which calls for targeted sensitization drives.

5.2 Policy implications

The study clearly indicates that lack of information, misinformation and fear were major challenges in the practice of preventive measures and decision to get vaccinated. In this regard, *a well-conceived communication strategy needs to be developed to tackle the 'infodemic', especially among the poor or those with no digital literacy.* Policy makers and health officials need to ensure fast and frequent communications with the vulnerable communities to bridge the gap between the desired and actual levels of knowledge, attitudes and practices among the general population.

The study also brings out television and mass media as the most widely accessed mediums of dissemination. These could be efficiently utilised to provide right information to the public at the right time in enabling them to take informed decisions regarding COVID-19. Also, television can be the most effective medium for people with poor digital literacy. *Public health communications in the form of short commercials on television and popping up of messages on social media sites can help ensure a larger audience response.* Moreover, various digital platforms can be used to communicate messages



Location: Cheentri Village, Dungarpur District, Rajasthan

to the youth and those who are socio-economically more privileged.

Awareness generation in areas like knowledge related to symptoms of COVID-19, testing and treatment facilities, availability and usefulness of vaccines are needed for upscaling CAB. Also, targeted sensitisation drives are needed in rural areas, for women, senior citizens and socio-economically disadvantaged people living in slums and those with low education levels.

There is a notable gap between self-reporting and actual behaviour. Self-reporting is noted to be high as a result of stigma and fear attached to COVID-19. Therefore, *any programmatic intervention needs to be based on observation and social experiments rather than only on household surveys.*

Moreover, the highly digitised vaccination programmes in India have posed systematic barriers in access to vaccination. For instance, as the study indicated, urban areas faced issues like unavailability of vaccines which was more of a logistic nature. On the other hand, rural areas faced issues such as getting preferred time slots which might have been due to a combination of low coverage of health facilities in rural areas as well as

low digital knowledge among rural communities. Any further increase in the uptake of vaccinations will require concerted programmatic interventions to increase digital knowledge among those who are lagging behind.

In communities and regions where access to mass media and penetration of government awareness programmes are low, the help of *trusted health workers within the communities, such as ASHAs and doctors can be used to spread awareness among the locals.* Another important policy action may be to *adopt a convergent approach to work with a wide network of stakeholders, especially those who work at the local level, such as women self-help groups, community influencers, youth volunteers, senior citizen groups.* This will help in rapid dissemination of relevant information as well as provide mediums for two-way communication and feedback regarding programmatic and infrastructural barriers in accessing existing programmes.

Specific programmatic interventions are needed for different arenas like knowledge about the disease, perceptions of vaccines, and attitudes and behaviours of people in public and private spaces. These are discussed in Table 5.1.

Table 5.1: Policy Implications

Spreading Knowledge	Strategic Interventions	Target Groups/Support Systems
Sensitisation of senior citizens regarding testing facilities and available treatments emerges as an urgent policy concern.	The communication strategy needs to be strengthened in rural areas as self-reporting was very high while the actual practice was low.	Younger age groups and those with low level of education are lagging in terms of knowledge regarding vaccine effectiveness.
Focused programmatic interventions are needed for the socio-economically disadvantaged groups such as individuals in slums, women and those with low level of education.	Triangulating evidences from studies based on different approaches is vital in understanding the socio-economic and cultural barriers to knowledge and practice of CAB.	Women especially in rural areas have been 'left behind' as far as uptake of COVID-19 vaccination is concerned.
Television can provide public health information updates to those sub-groups whose access to public spaces and other sources of information is scarce and where literacy levels both functional and digital are low.	Special attention should be given to states like Jharkhand and Chhattisgarh in terms of awareness generation regarding CAB.	Individuals tend to rely on trusted sources such as Health Ministry, community health workers and doctors for getting information regarding vaccination.



Location: Shukna Lake, Chandigarh



Location: Lalghati Square, Bhopal, Madya Pradesh



Location: Chungathara, Malappuram, Kerala

5.3 Way forward

India is known to be a complex mix of social, cultural, regional and economic disparities which is also reflected in the varying levels of health beliefs and behaviours among different sections of the population. The current study attempts to capture this diversity by conducting the study in 11 major states/union territories in India. However, the rapidly changing nature and evolution of the disease necessitates periodic data and evidence generation through comprehensive studies at the national level.

This study highlights the knowledge, attitude and practice (KAP) of various aspects of the COVID-19 virus spread and behaviours that are relevant from a policy perspective. Certain segments of population such as the urban poor, women and

the illiterates who are also historically known to be disadvantaged remain vulnerable with regard to knowledge and practice of COVID-19 appropriate behaviours.

The current study was based on information drawn from three different types of surveys, each with its unique set of advantages. However, the significant difference between the self-reported and the observed level of practices of CAB among the general population points to the complexity in collecting information regarding diseases and associated knowledge, attitudes and practices. Hence, future studies focusing on exploring disease related behaviours and attitudes should take into consideration the reporting bias often observed in such studies.



Location: Lalghati Square, Bhopal, Madhya Pradesh

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Annexures

Annexure 1.1: COVID Appropriate Behaviour Survey (CABS)

Observation Survey Questionnaire

1. Survey Area Type

Rural Urban

2. States

Delhi Rajasthan Karnataka
Punjab Chhattisgarh Kerala
Haryana Jharkhand Tamil Nadu
Maharashtra Madhya Pradesh

3. If selected Rural

Name of the District: _____

4. If selected Urban

Name of the City: _____

5. Locations for Rural

Village Chaupal Religious Place Transport hub
Tea Stall Market or Local Haat Shared Water Connection

6. Locations for Urban

Public Transport Restaurant Chowk in Locality
Cinema Hall Religious Place Community Toilets
Mall Open Market

7. Time when observation made: _____ (hh:mm)

8. Gender of the Person Observed

Female Male Others

9. Age Group of the Person Observed

Youth (15-20) Middle Aged (46-60)
Adult (21-45) Senior Citizen (> 60)

10. Whether or not observed individual is Wearing Mask

Yes No

11. If wearing mask, is it worn properly

(Proper means NO to all of these improper mask indicators: Mask under the nose OR Mask under the chin OR Mask hanging from one ear OR Mask not covering entire chin and nose OR Mask loose from nose with gaps OR Improper mask (unclean/torn) OR Using duppata/kerchief/gamcha or repeatedly touching mask or pulling it down while speaking)

Yes No

12. Is the person Maintaining Physical Distance of 2 metres

Yes No

13. Is the person touching unclean surfaces with hands

Yes No

14. If YES to Q No 13: Is the person Sanitising Her/His Hands after touching unclean surfaces?

Yes No

Annexure 1.2: Social Experiments (SE)

Questionnaire

1. Survey Area Type

Rural Urban

2. States

Delhi Rajasthan Karnataka
 Punjab Chhattisgarh Kerala
 Haryana Jharkhand Tamil Nadu
 Maharashtra Madhya Pradesh

3. If selected Rural

Name of the District: _____

4. If selected Urban

Name of the City: _____

5. Locations for Rural

Village Chaupal Religious Place Transport Hub
 Tea Stall Market or Local Haat Shared Water Connection

6. Locations for Urban

Public Transport Restaurant Chowk in Locality
 Cinema Hall Religious Place Community Toilets
 Mall Open Market

7. Gender of the Person Observed

Female Male Others

8. Age Group of the Person Observed

Youth (15-20) Middle Aged (46 – 60)
 Adult (21 – 45) Senior Citizen (>60)

9. Those who were not wearing mask

Madam/sir, May I know the issue/problem you face when you wear face cover/face mask? (Select as many as apply)

I face difficulty in breathing/feel suffocated
 My ears start painning due to elastic band
 I feel itching/irritation on my nose
 I remove it when talking
 When I speak with face cover, my voice sounds strange to me
 I get tired of wearing it
 I forgot to pull it back
 I have heard that it can cause carbon dioxide poisoning
 I have read that it cannot really protect you
 I do not think there is anything like COVID
 I have very strong immunity
 Others make fun/ridicule/don't do it and I feel embarrassed
 Any other

10. Those who were not maintaining social distance

Madam/sir, may I know what are the problems in maintaining 2-metres distance from others? (Select as many as apply)

- I will not get transmission from others
- I will not transmit to others
- When in hurry, you can't see who is close to you
- We are friends and none of us is COVID positive
- I maintain distance, but it is difficult to do so in crowded places like this
- We were too busy talking to each other. Did not realise
- There is no space around in this market
- The time of contact is too little for the other person to transmit
- Is the Corona virus hanging in the air?
- The whole COVID thing is a conspiracy
- I have very good immunity
- Others make fun/ ridicule/don't do it and I feel embarrassed.
- Any other

11. Those who were not using sanitiser after touching unclean surfaces

Madam/ Sir, when do we need to clean our hands and what are the problems in using sanitiser? (Select as many as apply)

We must clean hands because -

- We can get Corona virus from surfaces like railings, handles, etc.
- Surfaces which are touched by many people can transmit virus

Problems in using sanitiser -

- It is impractical to stop and clean hands
- A bottle of sanitiser is expensive and cannot afford
- I purchased sanitiser but it got over
- I get allergic reactions to sanitisers
- I am wearing gloves
- I wash my hands with soap on reaching home/office
- I carry sanitiser, I can show it
- I have very strong immunity
- The whole COVID thing is a conspiracy
- Others make fun/ ridicule / don't do it and I feel embarrassed
- Any other

Annexure 1.3: Knowledge and Attitude (KAS)

Household Survey Questionnaire

I am (please give your name) on behalf of UNICEF. We are collecting some information about COVID-19 and COVID appropriate behaviours. This information will be used to strengthen prevention and management services for COVID-19. I would like to ask you a few questions–this will take about 15-20 minutes. Your identity will be kept confidential. You are free not to answer these questions. Do I have your permission to proceed? Yes/No. If 'Yes', please proceed.

Yes No

1. Area Type

Rural Urban

2. States

Delhi	<input type="checkbox"/>	Rajasthan	<input type="checkbox"/>	Karnataka	<input type="checkbox"/>
Punjab	<input type="checkbox"/>	Chhattisgarh	<input type="checkbox"/>	Kerala	<input type="checkbox"/>
Haryana	<input type="checkbox"/>	Jharkhand	<input type="checkbox"/>	Tamil Nadu	<input type="checkbox"/>
Maharashtra	<input type="checkbox"/>	Madhya Pradesh	<input type="checkbox"/>		

3. If selected rural

3.1 Name of the District: _____

3.2 Density of Population:

Sparsely Populated Densely Populated

3.3 Service Available in the villages (select all that apply)

Anganwadi Centre	<input type="checkbox"/>	Primary School	<input type="checkbox"/>	Senior Secondary School	<input type="checkbox"/>
PHC	<input type="checkbox"/>	Upper Primary School	<input type="checkbox"/>		
Sub-Centre	<input type="checkbox"/>	Secondary School	<input type="checkbox"/>		

4. If selected 'Urban'

4.1 Name of the City: _____

4.2 Urban Area Type:

Slum Middle Income Residential Area High-Income Residential Area

5. Age of the respondent (in completed years):

6. Gender

Female Male Others

7. How many rooms are there in your house? (Excluding bathrooms, toilets and kitchen)

8.1 Do you have access to drinking water and latrine facilities within your premises?

Yes – for exclusive use Yes – shared use No

8.2 Do you have availability of soap and water for handwashing within your premises?

Yes No

8.3 In your opinion, has handwashing with soap changed after COVID-19 pandemic?

Wash every hour	<input type="checkbox"/>	No change	<input type="checkbox"/>
Sometimes in a day	<input type="checkbox"/>	Can't say	<input type="checkbox"/>

8.4 Do most members of your family wash their hands with soap when they come from outside?

Always	<input type="checkbox"/>	No	<input type="checkbox"/>
Sometimes	<input type="checkbox"/>	Can't Say	<input type="checkbox"/>

9. Total number of people living in your home (excluding temporary guests) _____

10.1 Among the people in your house, how many are <18 years old? _____

10.2 Among the people in your house, how many are more than 60 years old? _____

11.1 Among the people in your house, how many are Female (Enter number) _____

11.2 Among the people in your house, how many are Male (Enter number) _____

12. Completed Level of Education of the respondent

Illiterate	[]	Class 10 (high school)	[]	Postgraduate	[]
Below Primary	[]	Class 12 (Intermediate)	[]	Professional degree	[]
Primary school	[]	Diploma	[]		
Class 8 (middle)	[]	Graduation	[]		

13. Occupation of the main earning member of the household

Self-employed (agriculture, own business)	[]
Regular wage earner (daily/weekly)	[]
Salaried (regular-monthly)	[]
Unemployed	[]
Other – Non-Worker (student, pensioner, rentier)	[]

14. Average monthly family income (from all sources) _____

15. Do you know WHERE the nearest Covid-19 Testing Facility is?

Yes	[]	No	[]
-----	-----	----	-----

16. Have you or any member of your family been tested positive for Covid-19 at any time since March 2020?

Yes	[]	No	[]	Can't Say	[]
-----	-----	----	-----	-----------	-----

17. If yes, did you/that family member have any symptoms of Covid 19?

Yes	[]	No	[]	Can't Say	[]
-----	-----	----	-----	-----------	-----

18. Which of the following symptoms do you think could be due to Covid 19 infection? (Select all that apply)

Fever	[]	Aches and Pains	[]	Diarrhoea	[]
Tiredness	[]	Nasal Congestion	[]	Other	[]
Dry Cough	[]	Sore Throat	[]	Other (specify) _____	

19. What is your principal source of information on COVID-19?

TV	[]	Announcement during phone call	[]
Radio	[]	Public announcements	[]
Newspaper	[]	Peers	[]
Posters	[]	Others	[]
Social media	[]	Other (Specify) _____	
SMS	[]		

20. In your opinion, what are the preventive measures to stop the spread of COVID-19? (Select all that apply – Please do not read the options?)

Maintaining physical distancing in public spaces	[]
Wearing mask in public	[]
Washing of hands with soap frequently	[]
Avoiding visit to public places and social gatherings	[]
Sanitization of hands after touching any surface at public place	[]
Quarantine new return-migrants in rural locations	[]
Self-quarantine when tested positive or with symptoms	[]
Avoiding social/public gatherings	[]
Other	[]

21. From the options given below, please respond how frequently you practice

		Always	Often	Sometimes	Never
21A	Frequently clean hands with soap and water or alcohol-based hand rub				
21B	Regularly clean and disinfect frequently touched surfaces within your home				
21C	Regularly clean and disinfect frequently touched surfaces within your workplace				
21D	Regularly Practice respiratory hygiene (e.g, cover mouth & nose with bent elbow/ tissue when coughing / sneezing)				
21E	Maintain physical distance from someone who is coughing or sneezing when at home				
21F	Maintain physical distance from other people when you are outdoors or at workplace				
21G	Wearing mask when stepping out of home				
21H	Staying informed on the latest health advice				
21I	Avoiding travel to crowded areas				
21J	Avoiding family functions/weddings/parties/gatherings				
21K	None of the above				

22A. In your opinion, who all are at higher risk of COVID-19 complications? (Select all that apply – Please do not read the options)

- Children up to 18 years People in 46-60 age group Pregnant women
 People in 19-30 age group People above 60 People with co-morbidities
 People in 31-45 age group Women

22B. What do you consider for safety of children upto 18 years from COVID-19? (Select all that apply)

- Follow CAB when children are taken for routine immunisation
 Give full immunisation to children
 Give adequate nutrition to children
 Other
 Other (specify)

22C. Do you or any of your family members have any of the following comorbidities (BP, DM, TB, COPD, CAD)?

- Yes No Can't say

23. If yes, are you or your family member taking medicines regularly?

- Yes No Sometimes

24.A. In the past 4 weeks, have you or any of your family members had any health issue where you wanted care or advice from a health professional (e.g., doctor, nurse, physiotherapist, pharmacist, dentist, etc.)?

- Yes No

24.B. If yes in Q24.A, what did you do? (Select all that apply – Please do not read the options)

- Went to Govt. primary health care facility
 Walked in to an OPD in the local hospital
 Took an appointment and went to a hospital
 Took an appointment and went to a private clinic
 Went to a drug shop or pharmacy
 Had a phone consultation with a health professional
 Had an online consultation with a health professional
 Doctor came for home-visit
 None of these things

24.C. If 'None of these things' in Q24.B, what were the major reasons for not seeking medical care? (Select all that apply – Please do not read the options)

- It is too difficult to travel to a health facility at this time []
- The health facility is not seeing patients for my health condition at this time []
- I am fearful of contracting COVID-19 at a health facility []
- I am fearful of contracting COVID-19 on my way to/from the health facility. []
- I generally avoid going to healthcare facilities []
- I am fearful of what would happen if I tested positive for COVID-19 []
- I prefer to self-medicate/traditional medicine and healers []
- It is not possible for me to have a phone or online health consultation []
- I do not have the money for the appointment/travel/medicine []
- I cannot afford to miss work to seek medical care []
- Other []
- Other specify _____ []

25.A. In the last two weeks if you have been in contact with someone who tested positive for COVID -19

- Yes [] No []

25.B. If you have been in contact with a COVID positive person and you have no symptoms yourself – will you get yourself tested?

- Yes [] No []

25.C. If yes in Q25.B, choose options which apply (Select all that apply – Please do not read the options)

- Because I want to receive the appropriate care in case of a positive test []
- Because I would face penalties if I did not []
- Because I believe this helps stop the spread of COVID-19 []
- Because this way I can protect other people []
- Other []
- Other Specify _____ []

25.D. If no in Q25.B, choose options which apply (Select all that apply – Please do not read the options)

- Getting tested would cost a lot of money []
- Unaware of the testing locations and procedures []
- Scared of getting COVID-19 at testing centres []
- Fear of testing positive, which can lead to isolation and stigma []
- Social Stigma and Societal Pressure []
- Fear of not able to work due to quarantine []
- Not enough resources to self-isolate []
- Other []
- Other Specify _____ []

26. In your opinion, is there any specific treatment currently available for COVID-19?

- Yes [] No [] Can't say []

27. In your opinion, is there any vaccine available for COVID-19 in India currently?

- Yes [] No [] Can't say []

28.A. Is the vaccine useful

- Yes [] No [] Don't know []

28.B. Is the vaccine that is available currently free of charge?

- Yes [] Can't say []
No []

29. How many doses of the vaccine are recommended for effective prevention of Covid-19?

- One dose only [] Don't know []
- Two doses [] Not sure []
- Three or more doses []

30. After vaccination will you follow COVID-19 appropriate preventive measures (wearing a mask in public places, keeping hand hygiene, practicing social distancing, maintaining respiratory etiquette)?

Yes No
Sometimes Can't Say

31. Are you currently eligible to receive the vaccine?

Yes No Don't know

32.A. Have you taken Covid-19 vaccine?

Yes No

32.B. If yes in Q.32.A, did you face any difficulty in getting vaccinated? (select all that apply)

No difficulty
Yes - registration was difficult
Yes - could not get my preferred slot
Yes - waiting time was long
Yes - waited, but did not get vaccinated due to unavailability. Had to go again.

33. If eligible, are you ready to take vaccine for COVID-19 if available?

Yes Not sure
No

34. Your decision of whether or not to get vaccinated was / will be based on (select all that apply)

Country in which the vaccine is produced
Recommendation from my family doctor
Recommendation from the ASHA in my village
Recommendation of the Ministry of Health/Govt. Health Authorities
Whether the vaccine has been in use for a long time with no serious side- Effects
Whether the vaccine is used in other countries
Risk of getting infected with COVID-19
Recommendation by family, friends, community and / or religious leaders
Whether the vaccine is free of charge
Whether a high vaccination uptake would restore free movement outside
Effectiveness against new variants
Pharmaceutical company producing the vaccine
Any other, specify _____
Other Specify _____

35. Would you encourage others if eligible to get vaccinated for COVID-19?

Yes No Can't say

36. Will you pay for getting COVID-19 vaccine?

Yes
No
I will go to a government facility where it is free
Can't say

37. What cost per dose do you think is reasonable for you and your family to get vaccinated? (Write figures in Rupees) _____

38. Why do you think people are hesitant to take COVID-19 vaccine? (Rank the five options in order of importance - 1 most important & 5 least important)

		1st important	2nd important	3rd important	4th important	5th important
38A	Vaccines are considered unsafe.					
38B	Vaccination site is far away					
38C	It is very time consuming at the vaccination site					
38D	My family does not permit me					
38E	Risk of going against our religion / belief system					

39. What do you think can motivate people to take COVID-19 vaccine? (Rank the five options in order of importance - 1 most important & 5 least important)

		1st important	2nd important	3rd important	4th important	5th important
39A	Everyone in my neighbourhood has decided to make village / area COVID free					
39B	There will be post-vaccination follow-up to manage after effects of vaccination (AEFI)					
39C	If the vaccination is available near me					
39D	Success stories of people vaccinated in the area / locality					
39E	Vaccine certificate enabling unrestricted travel within / outside country					

Appendices

Appendix 1.1 : Sample Size from Each City and Districts under Each Study

Cities (Urban)			
City	KAS	CAB	SE
Delhi	106	312	54
Chandigarh	107	316	57
Pune	101	301	52
Aurangabad	116	330	58
Raipur	106	301	50
Ranchi	106	322	56
Bhopal	115	301	50
Bengaluru	101	315	56
Kasaragod	116	334	54
Chennai	108	307	51
Total (N)	1,082	3139	538
Districts (Rural)			
Rupnagar (Ropar)	120	320	56
Karnal	130	320	54
Nasik	116	323	57
Thane	104	314	57
Baswara	111	311	55
Dungarpur	107	319	54
Bastar	103	300	50
East Singhbhum	100	318	55
Indore	110	319	57
Kolar	121	307	52
Mallapuram	136	317	56
Madurai	140	321	56
Total (N)	1,398	3,789	659

Appendix 2.1: Share of Respondents Having Knowledge about Different Symptoms by their Educational Attainment and Age Groups

Symptoms	Education				Age Group			
	Illiterate	Upto Upper Primary	Upto Higher Secondary	Graduation & Above	19-30	31-45	46-60	Above 60
Fever	93	91	92	96	90	94	93	97
Tiredness	52	58	65	67	59	63	63	67
Dry cough	65	65	68	78	69	70	67	76
Aches and pains	28	37	41	46	35	42	41	48
Nasal congestion	35	39	44	53	42	48	41	47
Sore throat	50	48	53	65	49	56	56	67
Diarrhoea	7	9	12	18	10	12	14	22
Other	3	1	3	5	2	2	4	6

Source: Knowledge and Attitude Survey, July-August, 2021

Appendix 2.2: Percentage of Respondents with Knowledge of Available Treatments by Gender and Place of Residence

Response	Rural		Urban	
	Men	Women	Men	Women
Yes	48	45	60	62
No	37	34	28	25
Can't say	15	21	12	13

Source: Knowledge and Attitude Survey, July-August 2021

Appendix 3.1: Share of Respondents by Reported Knowledge of Preventive Measures of Covid-19 by Educational Attainment

Knowledge of preventive measures of COVID - 19	Illiterate	Upto Upper Primary	Upto Higher Secondary	Graduation & Above
Maintaining physical distancing	80	79	88	92
Wearing mask	79	83	88	90
Washing hands with soap frequently	76	77	79	87
Avoiding visit to public places	49	36	47	64
Sanitisation of hands after touching unclean surfaces	38	27	41	57
Quarantine of new return-migrants	29	15	20	27
Self-quarantine when tested positive or with symptoms	35	18	24	43
Avoiding social/public gatherings	38	23	26	40
Other	2	2	1	5

Source: Knowledge and Attitude Survey, July-August, 2021

Appendix 3.2: Availability of Exclusive Access to Water and Handwashing Practice during Covid-19 by Place of Residence

Water Access and Handwash	Rural			Urban		
	Rural	Yes	No	Urban	Yes	No
Always	53	58	13	63	64	22
Sometimes	42	39	73	34	33	68
Can't say/No	5	4	14	0	0	0

Source: Knowledge & Attitude Survey, July-August, 2021

Appendix 3.3: Percentage of Respondents Not Practising Covid Appropriate Behaviour

Indicators	Not Practising Any CAB (%)
Overall	14
Place of Residence	
Rural	11
Urban	17
Gender	
Men	13
Women	14
Urban Locality	
HIG	17
MIG	15
Slum	18
Level of Education	
Illiterate	15
Upto Upper Primary	14
Upto Higher Secondary	13
Graduation & Above	14

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.4: Share (%) of Respondents by Reasons for Not wearing Mask by Place and Gender

Reasons for not	Rural	Urban	Men	Women
Difficulty in breathing/suffocation	58	57	56	60
Pain in ears due to elastic band	42	47	43	46
Itching/irritation on nose	34	31	33	32
Removed while talking	32	27	33	25
Forgot to put properly after lowering	28	25	26	28
Felt that the voice sounds strange	25	22	23	26
Felt tired of wearing it	17	13	15	14
Mask not effective against COVID	9	10	11	8
Strong immunity	8	9	8	9
Nothing like COVID exists	6	7	8	4
Fear of carbon dioxide poisoning	6	9	7	8
Felt embarrassed/ bullied by others	5	1	2	5
Others	5	9	7	6

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.5: Observed Practice of Wearing Face Mask by Individuals in Rural Locations

Rural Location	Not wearing mask	Not wearing mask properly	Wearing mask properly
Market or Local Haat	53	21	27
Religious Place	75	10	16
Shared Water Connection	59	13	29
Tea Stall	61	19	19
Transport Hub/Bus Stand	54	19	27
Village Chaupal	55	21	24

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.6: Observed Practice of Wearing Face Mask by Individuals in Urban Locations

Urban Location	Not wearing mask	Not wearing mask properly	Wearing mask properly
Chowk in the Locality	25	26	50
Community Toilets	37	27	35
Mall	27	22	51
Open Market or Street	29	28	42
Public Transport	26	29	45
Religious Place	41	17	42
Restaurant	17	22	61

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.7: Observed Practice of Wearing Face Mask by Individuals in Rural Districts

District	Not wearing mask	Not wearing mask properly	Wearing mask properly
Banswara	46	16	38
Bastar	72	14	14
Dungarpur	46	23	31
East Singhbhum	54	25	20
Indore	86	1	13
Karnal	80	8	13
Kolar	53	20	27
Madurai	66	23	10
Malappuram	9	32	58
Nasik	61	22	17
Ropar	77	13	11
Thane	25	32	43

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.8: Observed Practice of Wearing Face Mask by Individuals in Urban Districts

Cities	Not wearing mask	Not wearing mask properly	Wearing mask properly
Aurangabad	32	26	42
Bengaluru	17	31	52
Bhopal	37	39	24
Chandigarh	40	27	33
Chennai	27	17	56
Delhi	17	27	56
Kasaragod	14	31	55
Pune	12	26	62
Raipur	69	20	10
Ranchi	19	12	69

Source: COVID-19 Appropriate Behaviour Survey, July-August 2021

Appendix 3.9: Observed Practice of Maintaining Physical Distancing by Individuals by Gender and Place of Residence

Physical Distance (Observed)	Urban			Rural		
	Men	Women	Person	Men	Women	Person
Not maintaining physical distance	55	61	57	65	63	64
Maintaining physical distance	45	39	43	35	37	36

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.10: Observed Practice of Maintaining Physical Distancing by Individuals in Rural Locations

Rural Locations	Not Maintaining Physical Distance	Maintaining Physical Distance
Market or Local Haat	67	33
Religious Place	78	22
Shared Water Connection	63	37
Tea Stall	75	25
Transport Hub/Bus Stand	55	45
Village Chaupal	65	35

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.11: Observed Practice of Maintaining Physical Distancing by Individuals in Urban Locations

Urban Location	Not Maintaining Physical Distance	Maintaining Physical Distance
Chowk in the Locality	53	47
Community Toilets	51	49
Mall	50	50
Open Market or Street	72	28
Public Transport	53	47
Religious Place	67	33
Restaurant	46	54

Source: COVID-19 Appropriate Behaviour Survey, July-August, 2021

Appendix 3.12: Observed Practice of Not Maintaining Social Distance by Individuals in Urban Districts

Cities	Not Maintaining Social Distance	Maintaining Social Distance
Aurangabad	56	44
Bengaluru	27	73
Bhopal	59	41
Chandigarh	79	21
Chennai	58	42
Delhi	63	37
Kasaragod	59	41
Pune	60	40
Raipur	78	22
Ranchi	36	64

Source: COVID-19 Appropriate Behaviour Survey, July-August 2021

Appendix 3.13: Observed Practice of Not Maintaining Social Distance by Individuals in Rural Districts

Districts	Not Maintaining Social Distance	Maintaining Social Distance
Banswara	43	57
Bastar	68	32
Dungarpur	50	50
East Singhbhum	73	27
Indore	97	3
Karnal	69	31
Kolar	68	32
Madurai	78	22
Malappuram	54	46
Nasik	70	30
Ropar	56	44
Thane	47	54

Source: COVID-19 Appropriate Behaviour Survey, July-August 2021

Appendix 3.14: Population Projection and Prevalence Rate

The prevalence rates for selected districts were estimated by the authors using data on total COVID-19 cases in the district and the district's total population. The population for the districts for 2021 was projected using the ratio method. The ratio method projects population growth for a sub-area using population projections for a larger or parent population. The formula used for the projection was:

$$District\ Population_{2021} = \frac{District\ Population_{2011}}{State\ Population_{2011}} * State\ Population_{2021}$$

Furthermore, the scattered plots were based on the prevalence rate and practice of three key COVID appropriate behaviours: wearing masks, keeping a social distance, and sanitising hands after touching any unclean surfaces. The classifications of High (prevalence rate)- High (practice), High-Low, Low-Low, and Low-High are based on the median prevalence rate and median of the above-mentioned CAB

Appendix 4.1: Percentages of Individuals Encountering Difficulty in Getting Vaccinated by Gender

Faced Difficulties in Vaccination	Overall	Gender		Place of Residence	
		Women	Men	Rural	Urban
Yes	45	42	48	46	45
No	55	58	52	54	55

Source: Knowledge and Attitude Survey, July-August, 2021

Appendix 4.2: Reasons Influencing Choice of Getting Vaccinated by Household's Place of Residence

Reasons for Behind Choosing to Getting Vaccinated	Rural	Urban
Recommendation from ASHA worker	47	9
Recommendation of Government	42	50
Recommendation from doctor	31	32
If vaccine is free of charge	27	22
Country in which the vaccine is produced	26	20
Risk of getting infected with COVID-19	25	29
Free movement outside	15	19
Ensuring no side effect	14	27
Effectiveness against new variants	14	28
Recommendation by peers	13	22
Global recognition	7	9
Pharmaceutical company producing the vaccine	1	5

Source: Knowledge and Attitude Survey, July-August, 2021

Appendix 4.3: Reasons Influencing Choice of Getting Vaccinated by Respondent's Gender

Reasons for Behind Choosing to Getting Vaccinated	Men	Women
Recommendation of Government	48	42
Recommendation from doctor	33	30
Recommendation from ASHA worker	31	30
Risk of getting infected with COVID-19	28	25
If vaccine is free of charge	25	24
Country in which the vaccine is produced	25	21
Ensuring no side effect	23	15
Effectiveness against new variants	22	17
Free movement outside	18	15
Recommendation by peers	17	16
Global recognition	8	8
Pharmaceutical company producing the vaccine	3	2

Source: Knowledge and Attitude Survey, July-August, 2021

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दवाती चौक, मचल



Location: Machal, Indore, Madhya Pradesh



Location: Agampur Village Bus Stand, Roopnagar, Punjab



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